United States
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Natural
Resources
Conservation
Service

In cooperation with Ohio Department of Natural Resources, Division of Soil and Water Conservation; Ohio Agricultural Research and Development Center; Ohio State University Extension; Wood Soil and Water Conservation District; and Wood County Commissioners

Soil Survey of Wood County, Ohio

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

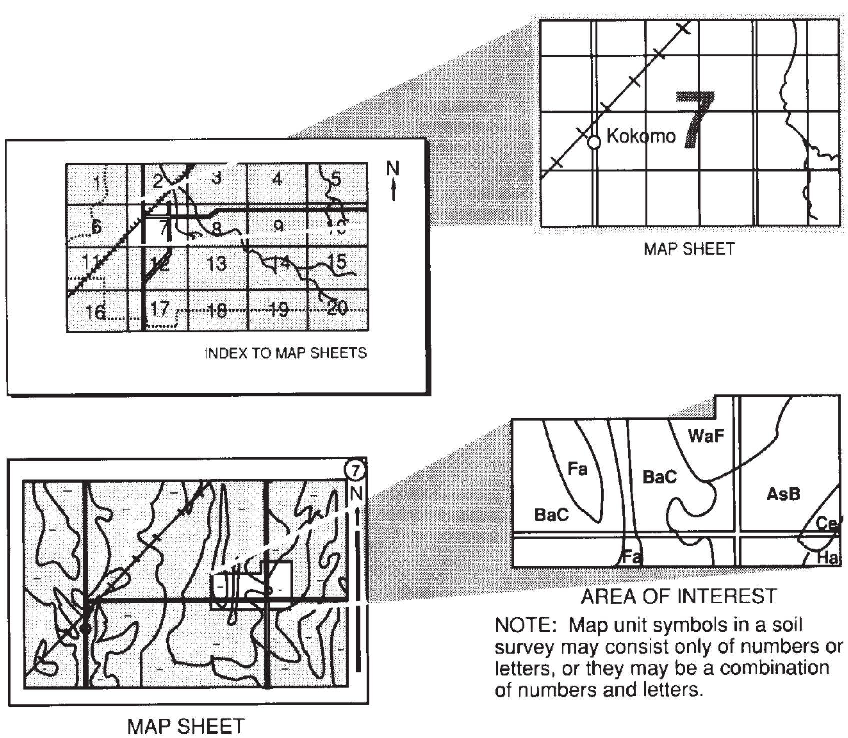
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1998. Soil names and descriptions were approved in 2000. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1999. This survey was made cooperatively by the Natural Resources Conservation Service; the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; Ohio State University Extension; the Wood Soil and Water Conservation District; and the Wood County Commissioners. The survey is part of the technical assistance furnished to the Wood Soil and Water Conservation District.

Cover *(clockwise from upper left):* Ponds and protective windbreaks are commonly associated with farmsteads in areas of Hoytville clay loam, 0 to 1 percent slopes; Sloan soils along the Maumee River provide areas of wetland habitat; a profile of Hoytville silty clay, 0 to 1 percent slopes; urban expansion in northern Wood County in an area of Latty silty clay, till substratum, 0 to 1 percent slopes.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2007

Foreword

This soil survey contains information that affects land use planning in Wood County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Terry J. Cosby
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Wood County, Ohio

By Rick A. Robbins and Aaron M. Lantz, Ohio Department of Natural Resources, Division of Soil and Water Conservation

Fieldwork by Mark M. Feusner and Rick A. Robbins, Ohio Department of Natural Resources, Division of Soil and Water Conservation, and Donald N. McClure, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; Ohio State University Extension; the Wood County Commissioners; and the Wood Soil and Water Conservation District

Wood County is in northwestern Ohio (fig. 1). It is bordered by Lucas County to the north, Henry County to the west, Hancock County to the south, and Ottawa, Sandusky, and Seneca Counties to the east. The Maumee River delineates the northwestern boundary between Wood County and part of Lucas County. Wood County has a total area of 397,108 acres, or 618 square miles. In 1990, the county's population was 121,065 and Bowling Green, the county seat, had a population of 29,636 (U.S. Department of Commerce, 2000).

Industry and farming are the major enterprises in Wood County. The county supports strong manufacturing industries. The county has both light and heavy industrial plants. In addition, the county has strong retail and service sectors. Bowling Green State University provides local educational opportunities. The Maumee River provides access to Lake Erie and access to marinas, sport fishing, and other tourist industries. Most agricultural land is used for cash grain crops. Soybeans, corn, wheat, and hay are the principal crops. Sugar beets and specialty crops, such as cabbage, tomatoes, and melons, also are grown. Dairy and livestock enterprises are important sources of revenue. A small percentage of land is devoted to woodlands, generally on steep slopes along major streams and in undrained areas.

This survey updates the soil survey of Wood County published in 1966 (Rapparlie and Urban, 1966). It provides additional information and has larger maps. It also provides updated photoimagery.

General Nature of the County

This section provides some general information about the survey area. It describes climate; history; physiography, relief, and drainage; natural resources; glacial geology; bedrock geology; transportation facilities; and recreation.

Figure 1.—Location of Wood County in Ohio.

Climate

Wood County is cold in winter and hot in summer. Winter precipitation, frequently in the form of snow, results in a good accumulation of soil moisture by spring and minimizes drought during the summer. Normal annual precipitation patterns are adequate for all of the crops that are adapted to the temperature and the growing season in the survey area.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bowling Green in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 27.0 degrees F and the average daily minimum temperature is 19.3 degrees. The lowest temperature on record, which occurred at Bowling Green on January 19, 1994, is -20 degrees. In summer, the average temperature is 71.1 degrees and the average daily maximum temperature is 82.5 degrees. The highest temperature, which occurred at Bowling Green on July 10, 1936, is 110 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 33.20 inches. Of this total, 19.23 inches, or about 58 percent, usually falls in May through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.49 inches at Bowling Green on July 10, 1979. Thunderstorms occur on about 37 days each year, and most occur between May and August.

The average seasonal snowfall is 21.9 inches. The greatest snow depth at any one time during the period of record was 20 inches recorded on February 6, 1978. On an

average, 38 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 10.0 inches recorded on March 5, 1993.

The average relative humidity in midafternoon is about 58 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 41 percent in winter. The prevailing wind is from the west-southwest. Average windspeed is highest, around 11 miles per hour, from December to April.

History

The earliest inhabitants of the survey area were the Native Americans of Wyandot, Ottawa, and Shawnee culture. These semi-nomadic people had permanent villages along the major rivers. They grew maize and wild rice in small clearings to supplement their diet. Their villages were generally high and dry, not in the "Black Swamp" that makes up most of Wood County.

Wood County is named for Col. Eleazer Derby Wood, who was the officer in charge of building Ft. Meigs during the War of 1812. The area was first known as the Great Swamp and was later known as the Black Swamp.

The diary of David Zeisberger, a Moravian missionary who traveled through the area, provides an early description of the Black Swamp. He writes of "deep swamps and troublesome marshes," the many miles "where no bit of dry land was to be seen, and horses at every step wading in the marsh up to their knees...." He also noted the clayey nature of the soil, "which is one reason why the water remains standing" (Bliss, 1885).

Ground was broken for the Wabash and Erie Canal in 1832 and for its important connecting link, the Miami and Erie Canal, in 1833 (Kaatz, 1955). The advent of these trade routes along major watercourses, however, did little to help open up the Black Swamp.

It is an easy oversimplification to state that the railroad was responsible for the eventual settlement of the Black Swamp merely because the peak period of railway construction coincided with the peak period of settlement. The importance of the railroad cannot be denied, but were it not that railroad construction and the development of systematic drainage coincided, the rate of settlement would have been much slower (Kaatz, 1955). Lumbering aided drainage operations, and the railroads helped speed drainage construction by aiding lumbering. Drainage construction would have been a heavy burden on the farmers had not the railroad "afforded a market for the timber which formerly had no value, and rendered the 'winter crop' of timber almost as valuable as their summer crops" (Kaatz, 1955). In the 1860s, the railways of Ohio consumed 1 million cords of wood annually for fuel alone and an unknown quantity for ties.

The first 20 years of drainage construction (1860–1880) dealt mainly with clearing, deepening, and widening natural drainage channels. By 1880, drainage ditches had been constructed along the perimeters of almost every section of land in the counties of the Black Swamp (Wilhelm, 1984).

Ditching alone would not solve the problem of standing water in the fields. Artificial underdrainage became a necessity. In the 20 years before tile mills were built in sufficient numbers (before 1880), local farmers were using native lumber to build plank underdrains. Two boards nailed together like an upside-down eave trough served as early field drains. As farming got more profitable and more local clay tile plants developed, systematic clay tile replaced the old planks.

Agriculture has played a dominant role in the settlement and development of Wood County. The oil boom in the late 1800s was responsible for providing an influx of inhabitants to the county. Even with the present-day economic dependence on industry

and manufacturing, Wood County still relies heavily on the economic base provided by the agricultural industry.

Physiography, Relief, and Drainage

All of the physiographic features in the county are a result of the Wisconsinan glaciation. Wood County lies entirely within MLRA 99, the Erie-Huron Lake Plain (USDA, 2006). As an area of lake plain physiography, Wood County has a relatively uniform, level and nearly level topography (fig. 2). The highest point in the county is about 775 feet above sea level, along the Seneca County line, in Perry Township, near Fostoria. The lowest point in the county is about 575 feet above sea level, where the Maumee River enters Lucas County, near Rossford.

Glacial deposits cover the entire county (Rapparlie and Urban, 1966). This drift is the parent material for most of the soils in the county. The glacial deposits range in thickness from less than 1 foot to more than 100 feet. Broad uniform flats where till was planed and modified by water currents and wave action characterize this level and nearly level lake plain. Most of the county has slopes of 6 percent or less. The steeper areas are associated with beach ridges, bedrock highs, eolian dunes, or stream and river valleys dissected by modern-day streams.

Beach ridges typically mark the shorelines of various stages of Glacial Lake Maumee (Forsyth, 1961). There are beach ridges that mark the levels of three lake stages: Whittlesey (738 feet above sea level); remnants of Arkona in the eastern part of the county (685 to 709 feet above sea level); and Warren (666 to 680 feet above sea level).

Figure 2.—A typical landscape in Wood County includes large, open areas of cultivated fields and small, scattered woodlots, generally less than 40 acres. Pictured is an area of Hoytville clay loam, 0 to 1 percent slopes.

Bedrock highs are primarily in the eastern two-thirds of the county. These areas were reefs and islands during various stages of Glacial Lake Maumee. Most of these bedrock areas occur east of the Bowling Green fault.

Eolian dunes are prominent landforms that are oriented from southwest to northeast. They occur primarily as discontinuous bands in the central part of the county. These dunes are in close proximity to the Warren beaches, which are the source of the eolian sands.

Modern-day streams and drainage patterns account for most of the relief in Wood County. Areas with the most dissection occur along the Maumee and Portage Rivers.

Wood County drains into Lake Erie by two principal watersheds—the Maumee and the Portage. Although the Maumee is the larger river, the Portage drains more of the county. The smaller Cedar, Crane, and Toussaint Creek watersheds drain the northeastern part of the county.

Natural Resources

Dolostone and limestone, sand, gravel, and clay have all been quarried in Wood County at one time or another. Most of these resources are of minor extent, mainly because of relatively thin high-quality deposits.

Dolostone and limestone are the major components of Wood County bedrock. These rocks compose the Salina, Tymochtee, Greenfield, and Lockport groups formed during the Silurian and early Devonian Ages (Ohio Department of Natural Resources, 1999). Limestone has been mined from these formations in several areas of the county; however, there are only four active sites. These are near the villages of Portage, West Millgrove, Weston, and Lime City. Since limestone is at or near the surface in Wood County, there are many small inactive limestone quarries scattered throughout the county. Most of the limestone is used for agricultural or industrial uses or for the transportation industry.

Small sand and gravel pits are scattered throughout the county, mostly along beach ridges, rivers, and streams. No sites in the county are currently being mined. The sand and gravel deposits are of limited size, ranging from 1 to 10 acres. The largest gravel pit is along a beach ridge in the central part of the county. This pit was about 25 acres at the time it was abandoned.

Glacial Geology

Richard R. Pavey, Ohio Department of Natural Resources, Division of Geological Survey, assisted in the preparation of this section.

Significantly late in geological time (about 2 million years ago), glaciers began to move across the area in a southern and western direction. Many glacial advances, with ice as much as 1 mile in thickness, followed by subsequent melting and recessions, filled valleys and low bedrock areas with glacial till and lacustrine sand, silt, and clay. The late Wisconsinan glaciers, approximately 15,000 to 24,000 years ago, were the last glaciers to cover Wood County (Forsyth, 1961). The glacial ice gouged out a pre-glacial river valley to form the Lake Erie basin. As sheets of ice advanced uphill out of the basin, high bedrock areas obstructed glacial deposition, leaving the bedrock hills thinly covered with drift or completely exposed. Examples of soils that formed in a thin mantle of glacial material over bedrock include Joliet, Marblehead, Millsdale, Milton, Randolph, and Ritchey soils.

As the glacial ice was receding for the last time, the Erie Basin was filled by a series of different lakes that formed in front of the ice sheet. For a few thousand years, lake levels varied in these lakes as drainage outlets were blocked or opened by the fluctuating ice front of the last glacier.

Six distinct lake levels of Glacial Lake Maumee inundated Wood County. The main body of the lake lies across the entire county. Fluctuating lake levels and wave action smoothed out shallow bottom areas, wave-planed the glacial till, and provided coarse sediments to form beaches. Beach ridges in the county are products of these earlier lake levels. Alvada, Belmore, Cygnet, Digby, Haney, Millgrove, Oshtemo, and Shawtown soils formed in these materials. In the northwestern part of the county are segments of old beach ridges and sand dunes. These provide evidence of the reworking of beach sediments during subsequent higher lake levels, caused by slight readvances of the ice sheet far to the north. Granby, Ottokee, Spinks, Tedrow, and Wauseon soils formed in these sandy deposits. In shallow water areas, wave action washed the finer sized particles out of the glacial material, leaving patches of coarser sediments on top of the glacial till. Aurand, Haskins, and Mermill soils formed in this water-modified glacial till material. In areas where a thin mantle of sand was left on top of the till, Rimer and Seward soils formed. Hoytville and Nappanee soils formed in areas where the till was wave-planed by shallow lake water. Lacustrine sediments settled out of the water at the lowest, most recent lake levels in the northern part of Wood County. Some soils in the county, including Fulton, Latty, and Toledo soils, formed in these lacustrine deposits.

Bedrock Geology

Richard R. Pavey, Ohio Department of Natural Resources, Division of Geological Survey, assisted in the preparation of this section.

Wood County is in the eastern part of the Central Lowland Province. Proceeding from west to east in Wood County, the underlying bedrock dips and becomes progressively younger. The bedrock within the county is of sedimentary origin, primarily Silurian limestone and dolostone (Ohio Department of Natural Resources, 1947, 1981).

A narrow slice of the Dundee and Detroit River Groups underlies the westernmost part of Wood County, especially in Grand Rapids and Milton Townships. The Salina Undifferentiated Group underlies the western sections of the county, especially in Plain, Center, and Jackson Townships and the western half of Liberty and Henry Townships (Ohio Department of Natural Resources, 1999). The Tymochtee Group underlies an area in the central and south-central parts of the county, especially in eastern Center, Liberty, and Henry Townships. The Tymochtee Group lies west of the Bowling Green fault that parallels Interstate 75 south of Bowling Green. East of the fault, the Greenfield and Lockport Groups are the dominant bedrock members. These groups underlie virtually all of the rest of Wood County (Ohio Department of Natural Resources, 1999).

The Bowling Green fault is a major structural feature in northwestern Ohio. East of the fault was the primary location of numerous gas and oil wells during the late 1800s (Ohio Department of Natural Resources, 1992).

During the Silurian to Mississippian times (420 to 350 million years ago), Wood County was covered by a large, tropical inland sea. In the deeper areas, sediments consisting of deposits of carbonate precipitates, shells, and corals formed limestone and dolostone. Silt and clay sediments formed shale, and quartz and other silicate minerals were deposited to form sandstone in shallow water areas. As sedimentation and cementation continued, the pressures generated by the tremendous weight of the overlying sediments formed the bedrock of the county.

This depositional stage was followed by a prolonged period of geologic erosion that left a landscape of bedrock hills and stream valleys. Surface water drained northward into a large, eastward-flowing valley that occupied the present Lake Erie basin. Erosion left the oldest bedrock units exposed in the northwestern part of the county and the youngest exposed towards the southeast.

Transportation Facilities

Wood County is accessible by land, water, and air. Interstate 75 crosses the county from north to south and provides rapid access to Toledo and Cincinnati. Interstate spurs I-280 and I-475 also provide access to the Toledo area. The Ohio Turnpike (I-90) crosses the northern part of Wood County, providing access to Cleveland and Chicago. Federal and State highways provide additional access. These highways and a system of well-paved county and township roads provide easy access to all areas of the county. Six major railroad lines traverse the county, and there are two major switching yards.

A shipping terminal to the Great Lakes is located in Rossford. The county has two airports—Metcalf Field near Walbridge and Wood County Airport near Bowling Green.

Recreation

Wood County has more recreational opportunities than many of the other counties in northwestern Ohio. The extensive Wood County Park District has a network of 11 sites (including parks, hiking and bicycle trails, and nature preserves) throughout the county. The Ohio Division of Wildlife has 11 wildlife production areas totaling about 680 acres. The Ohio Department of Natural Resources maintains two State parks in the county that are along the Maumee River. These are Ft. Meigs and Mary Jane Thurston Park. Many educational and other seasonal activities scheduled for the public are available each year.

Bowling Green has several city parks and recreational facilities available for use by the public. There are also village parks throughout the county, which provide athletic fields, swimming pools, playground equipment, and shelter houses. There are public and private golf courses throughout the county. A wide variety of soils are used for recreational development. Several of the county and village parks make use of flood plains for seasonal outdoor opportunities.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses.

Soil scientists provided documentation for map units based on a work plan that enabled the fieldwork to be completed within a 2-year period. This work plan detailed the different levels of documentation to be collected on individual map units based upon experience acquired from surrounding modernization surveys.

Prior to the start of fieldwork, an evaluation worksheet was developed for all map units in the existing survey to assist in determining which map units could be updated within the project time frame of 2 years. Historical correlation documents for Wood County, the existing survey publication, and experience obtained in adjacent survey areas within the MLRA were used to make this evaluation. Those map units determined to require a large expenditure of time were not fully updated during the project and are referred to in this publication as “map units with minimum revision.”

On these map units with minimum revision, a single transect was conducted within the typical pedon delineation from the original soil survey publication. In some cases, multiple transects were conducted on certain map units with minimum revision. The component information acquired from these transects was added to the composition of each individual map unit.

Map units that had a relatively high confidence level for correlation purposes are referred to as “modernized map units.” On modernized map units, the soil scientists

observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape. On map units with minimum revision, the soil scientists used acquired knowledge from adjacent modernization survey areas to assist in the development of these models within Wood County. A large amount of the data from the original soil survey has been retained for these map units. Examples of this type of data are layer depths, horizon textures, water table depths, depth to bedrock, and slope range.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Original delineation boundaries from the previous survey were maintained for most map units. In some situations, the linework was shifted slightly to accommodate soil patterns on the photobase, changes in land use, or other observable differences on the photobase. Delineations were added for the purpose of separating areas of urban expansion and in areas disturbed by human activity. Photo interpretation and onsite evaluations were conducted to accurately place new linework.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information,

production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Survey Procedures

Wood County is the first survey in the State of Ohio for which a “mixed vintage” approach was used in the publication of soil survey information. This approach integrates newly acquired soil survey data and information with existing soil survey data from the original publication where applicable. The intent of this approach is to provide the most current and critical soil information for local users within a reasonable period of time.

The general procedures followed in modernizing map units are described in the “National Soil Survey Handbook” (USDA, National Soil Survey Handbook) of the Natural Resources Conservation Service. The previously published survey of Wood County (Rapparlie and Urban, 1966) and U.S. Geological Survey topographic quadrangles were among the references used.

Prior to the soil survey modernization, a soil survey review team conducted an evaluation of the 1966 Wood County soil survey at the request of the Wood County Commissioners and the Wood Soil and Water Conservation District. A report of the evaluation was prepared and sent to the Soil Inventory Board for review. After reviewing the evaluation report, the Soil Inventory Board recommended a soil survey modernization program and outlined the work to be completed for the soil survey modernization.

Before the fieldwork was begun, a detailed study of all existing laboratory data, soil survey reports, and research studies was conducted by the Wood County soil survey staff. U.S. Geological Survey topographic maps, at a scale of 1:24,000, were used to help the soil scientists relate land and image features.

A project work plan was developed to provide a schedule for preliminary office work and actual fieldwork to be completed within a 2-year time frame. An evaluation was completed on each individual soil series and map unit within Wood County. Each map unit was assigned a rating for reliability, meeting current NCSS standards, lab data availability, adjacent data from surrounding updated counties, and a document that tracked the correlation decisions from the original survey. Additional input on the quality of soil survey information for individual map units was acquired from the Wood Soil and Water Conservation District. After these information sets were developed and analyzed, the soil scientists established priorities for modernizing map units within a time frame of 2 years. The 2-year scope of fieldwork eliminated the possibility of updating all map units within Wood County. The status of map units in Wood County is provided at the end of this section.

Wood County includes a large number of soil series. The 1966 soil survey is a valuable historical document that was relied on extensively during the modernization process. Patterns of soils on the landscape are typically complex. Modern soil survey procedures differ from those practiced in the earlier survey. Some soil series used in

the old report no longer apply to the soils that were mapped and correlated during this update. Not all of the soil series that are currently in use were recognized at the time the previous survey was made. Soil observations and evaluations during the 1966 survey were made to a depth of 60 inches or less. During the modernization project, observations and evaluations were routinely made to a depth of 80 inches or to bedrock on the modernized map units. On the map units with minimum revision, at least one 10-point transect and pedon description to 2 meters was recorded within the typical pedon delineation from the original survey.

Recent aerial photographs, photographs from earlier flights, the Quaternary Geology Map of Ohio (Ohio Department of Natural Resources, 1998), the Geologic Map of Ohio (Ohio Department of Natural Resources, 1981), and the U.S. Geological Survey quadrangles were used in making the survey. The maps and soil descriptions in the previously published survey of Wood County (Rapparlie and Urban, 1966) were used as references in the correlation of soil series and map units. The old survey was also used to determine the areas of highest variability when mapping and transect intervals were planned.

Soil map units were traversed at various intervals, depending on the complexity of the soil types and patterns in the area. Map units that were targeted for transecting as part of the modernization process were randomly assigned in the office for field investigation and documentation. Borings were made at selected intervals during the transect to determine the composition of soil types within the map units. Soil scientists compared existing map units with the soil types in the area to determine whether earlier unrecognized soils with significant interpretive differences should be identified and separated during the survey modernization. Map unit boundaries were determined on the basis of soil examinations, observations, and photo interpretation. When necessary, map units were redelineated so that new series could be included and soil types recognized earlier could be better differentiated. Some map unit delineations were enlarged to include units previously mapped as another soil type when the differences in soil properties were not significant enough to require an additional map unit delineation. A data location map denoting where transects and observations were made is on file at the Northwestern Ohio Soil Survey Project Office in Findlay.

Representative pedon sites from the 1966 survey were located, and the soils at these sites were examined in order to determine whether they would meet present-day interpretation needs. The classification of these pedons also was compared with modern soil taxonomy standards. If the pedon was found to differ significantly in characteristics, a new pedon site was located that had soil properties representative of observations made during this soil survey.

Most soils were examined using hand augers and soil tubes. Field notes were taken during the evaluation process. Deeper samples were taken to document soil material to a depth of 80 inches or to bedrock. These samples were obtained by taking soil cores using a probe truck or using a hand auger with extensions. Pedons described as typical were studied and documented in excavated pits. Samples for laboratory analysis were taken at these pits and at other locations in the county to obtain chemical and physical analyses and to determine engineering properties. This information was used in the classification, correlation, and interpretation of specific soil types.

The project staff located all typical pedon sites of map units with minimum revision on the original publication map sheets. This decision was based upon the tenet that if these were the typical pedon sites, then they should represent the typical composition of the map unit. Then, a single 10-point transect was conducted within the delineation. The project staff recorded map unit composition, pedon features to a depth of 80 inches or to bedrock, land use, and other information typically recorded for a modernized map unit.

Data attributes for the map units with minimum revision have been populated to a depth of 60 inches (1.5 meters) or to bedrock. Layer depths for these map units reflect actual field observations from the original survey. In most cases, the layer depths reflect the original typical pedon. In a few cases, the layer depths from table 3 of the original 1966 publication were accepted. The layer depths in the current publication have been extended to depths greater than those observed during the original publication for most of the map units with minimum revision. The interpretive models that were used to generate the tables for this publication require data populated to a depth of 60 inches. The data populated to a depth of 60 inches is typical for the types of materials in these soils.

Samples for chemical and physical analyses were taken from representative sites of several of the soils in the county that were modernized. The chemical and physical analyses were made by the Soil Characterization Laboratory, School of Natural Resources, Ohio State University, Columbus, Ohio. The results of the analyses are stored in a computerized data file at the laboratory. The analyses for engineering properties were made by the Ohio Department of Transportation, Division of Highways, Testing Laboratory, Columbus, Ohio. The laboratory procedures can be obtained on request from the respective laboratories. The results of the analyses can be obtained from the School of Natural Resources, Ohio State University; the Ohio Department of Natural Resources, Division of Soil and Water Conservation; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

After completion of the fieldwork, map unit delineations were transferred by hand to another set of planimetrically correct photographs. Surface features were recorded from observation of the maps and the landscape. Delineations from the original survey were maintained on most map units. Modernized map unit delineations were modified based on actual field observation. Aerial photo interpretation was conducted on all map units during the compilation process. In some cases, linework was shifted from the original publication to meet soil patterns on the photos or to capture changes in land use. In other cases, linework was added to differentiate urban areas, disturbed areas, or areas where recently acquired lab data indicated an additional map unit should be separated.

Additional information regarding the procedures used in preparing this report can be obtained from the local offices of the Natural Resources Conservation Service.

The following lists indicate the overall status of the map units in Wood County. Briefly, modernized map units have soil attribute data extending to a depth of 2 meters (80 inches) or to bedrock. Map units with minimum revision have soil attribute data extending to a depth of 1.5 meters (60 inches) or to bedrock.

List of Modernized Map Units

AgA—Alvada loam, 0 to 1 percent slopes
AmA—Aurand fine sandy loam, 0 to 2 percent slopes
AnA—Aurand loam, 0 to 2 percent slopes
AsA—Aurand-Urban land complex, 0 to 2 percent slopes
CaA—Castalia very cobbly loam, 0 to 2 percent slopes
CbB—Castalia-Marblehead complex, very stony, 0 to 6 percent slopes
CvA—Cygnet loam, 0 to 2 percent slopes
CxB—Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes
FcA—Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FuA—Fulton silty clay loam, till substratum, 0 to 2 percent slopes
FuB—Fulton silty clay loam, till substratum, 2 to 6 percent slopes
FzA—Fulton, till substratum-Urban land complex, 0 to 2 percent slopes
GpA—Granby loamy fine sand, till substratum, 0 to 1 percent slopes
HgA—Hoytville clay loam, 0 to 1 percent slopes
HhA—Hoytville silty clay loam, 0 to 1 percent slopes

HvA—Hoytville silty clay, 0 to 1 percent slopes
HyA—Hoytville-Urban land complex, 0 to 1 percent slopes
LbB—Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded
LdA—Latty silty clay, till substratum, 0 to 1 percent slopes
LgA—Latty, till substratum-Urban land complex, 0 to 1 percent slopes
MdA—Mermill loam, 0 to 1 percent slopes
MfA—Mermill-Aurand complex, 0 to 1 percent slopes
MgA—Mermill-Urban land complex, 0 to 1 percent slopes
OsB—Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
RmA—Risingsun-Rollersville complex, 0 to 1 percent slopes
RnA—Rollersville-Risingsun complex, 0 to 1 percent slopes
RsA—Rossburg silt loam, 0 to 2 percent slopes, frequently flooded
SeA—Shawtown loam, 0 to 2 percent slopes
SeB—Shawtown loam, 2 to 6 percent slopes
SoA—Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
UcA—Udorthents, loamy, 0 to 2 percent slopes
UcE—Udorthents, loamy, 2 to 25 percent slopes
Ur—Urban land
W—Water
WbA—Wabasha silty clay, 0 to 1 percent slopes, frequently flooded

List of Map Units with Minimum Revision

BeB—Belmore sandy loam, 1 to 4 percent slopes
BfB—Belmore loam, 1 to 4 percent slopes
CcA—Colwood fine sandy loam, 0 to 1 percent slopes
CdA—Colwood loam, 0 to 1 percent slopes
CtA—Colwood-Urban land complex, 0 to 1 percent slopes
DgA—Digby sandy loam, 0 to 2 percent slopes
DhA—Digby loam, 0 to 2 percent slopes
DrA—Dunbridge sandy loam, 0 to 2 percent slopes
DsA—Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes
DsB—Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes
EaA—Eel loam, 0 to 2 percent slopes, frequently flooded
EmA—Eel silt loam, 0 to 2 percent slopes, frequently flooded
EnA—Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
GmA—Genesee loam, 0 to 2 percent slopes, frequently flooded
GnA—Genesee silt loam, 0 to 2 percent slopes, frequently flooded
HaA—Haney sandy loam, 0 to 2 percent slopes
HaB—Haney sandy loam, 2 to 6 percent slopes
HdA—Haney loam, 0 to 2 percent slopes
HdB—Haney loam, 2 to 6 percent slopes
HeA—Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes
HeB—Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes
HfA—Haskins and Digby, till substratum, loams, 0 to 2 percent slopes
HfB—Haskins and Digby, till substratum, loams, 2 to 6 percent slopes
HwA—Hoytville clay, shallow to carbonates, 0 to 1 percent slopes
JoA—Joliet silty clay loam, 0 to 1 percent slopes
KeA—Kibbie loamy fine sand, 0 to 2 percent slopes
KfA—Kibbie fine sandy loam, 0 to 2 percent slopes
KfB—Kibbie fine sandy loam, 2 to 6 percent slopes
KkA—Kibbie-Urban land complex, 0 to 2 percent slopes

MbA—Millgrove loam, 0 to 1 percent slopes
McA—Mermill fine sandy loam, 0 to 1 percent slopes
MeA—Mermill sandy clay loam, 0 to 1 percent slopes
MhA—Millsdale silty clay loam, 0 to 1 percent slopes
MkA—Millsdale silty clay loam, stony, 0 to 1 percent slopes
MmA—Millsdale-Urban land complex, 0 to 1 percent slopes
MnA—Milton loam, 0 to 2 percent slopes
MnB—Milton loam, 2 to 6 percent slopes
NmA—Nappanee sandy loam, 0 to 2 percent slopes
NmB—Nappanee sandy loam, 2 to 6 percent slopes
NnA—Nappanee loam, 0 to 2 percent slopes
NnB—Nappanee loam, 2 to 6 percent slopes
NnB2—Nappanee loam, 2 to 6 percent slopes, eroded
NpA—Nappanee silty clay loam, 0 to 2 percent slopes
NpB—Nappanee silty clay loam, 2 to 6 percent slopes
NpB2—Nappanee silty clay loam, 2 to 6 percent slopes, eroded
NsA—Nappanee-Urban land complex, 0 to 2 percent slopes
OtA—Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes
OtB—Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes
OzB—Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes
Pt—Pits, quarry
RbA—Randolph loam, 0 to 2 percent slopes
RbB—Randolph loam, 2 to 6 percent slopes
RdA—Randolph loam, stony, 0 to 2 percent slopes
ReA—Randolph-Urban land complex, 0 to 2 percent slopes
RfA—Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes
RfB—Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes
RgA—Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes
RhA—Ritchey loam, 0 to 2 percent slopes
RhB—Ritchey loam, 2 to 6 percent slopes
RkA—Ritchey loam, stony, 0 to 2 percent slopes
SdA—Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes
SdB—Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes
SgA—Shoals loam, 0 to 2 percent slopes, frequently flooded
ShA—Shoals silt loam, 0 to 2 percent slopes, frequently flooded
SkA—Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded
SmA—Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
SnA—Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SpA—Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded
SrB—Spinks fine sand, 2 to 6 percent slopes
SrC—Spinks fine sand, 6 to 12 percent slopes
SrD—Spinks fine sand, 12 to 18 percent slopes
SsB—Spinks loamy fine sand, 2 to 6 percent slopes
SsC—Spinks loamy fine sand, 6 to 12 percent slopes
StB—St. Clair loam, 2 to 6 percent slopes
StC2—St. Clair loam, 6 to 12 percent slopes, eroded
SuB2—St. Clair silty clay loam, 2 to 6 percent slopes, eroded
SuC2—St. Clair silty clay loam, 6 to 12 percent slopes, eroded
SuD2—St. Clair silty clay loam, 12 to 18 percent slopes, eroded
SuE2—St. Clair silty clay loam, 18 to 25 percent slopes, eroded
TeA—Tedrow loamy fine sand, 0 to 2 percent slopes

TeB—Tedrow loamy fine sand, 2 to 6 percent slopes
TfA—Tedrow-Urban land complex, 0 to 2 percent slopes
TpA—Toledo silty clay loam, 0 to 1 percent slopes
TuA—Toledo-Urban land complex, 0 to 1 percent slopes
WmA—Wauseon loamy fine sand, 0 to 1 percent slopes
WnA—Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes
WyA—Wauseon fine sandy loam, 0 to 1 percent slopes
WzA—Wauseon-Urban land complex, 0 to 1 percent slopes

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. These broad areas are called associations. Each association on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one association can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Hoytville Association

Very deep, level, very poorly drained soils that formed in wave-planed till (fig. 3)

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Slope range: 0 to 1 percent

Composition

Extent of the association in the county: 60 percent
Extent of the soils in the association:
Hoytville soils—83 percent
Soils of minor extent—17 percent

Soil Properties and Qualities

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wave-planed till
Texture of the surface layer: Silty clay, silty clay loam, clay loam, or clay
Slope: 0 to 1 percent

Soils of Minor Extent

- Aurand soils
- Eel soils
- Mermill soils
- Millsdale soils
- Nappanee soils

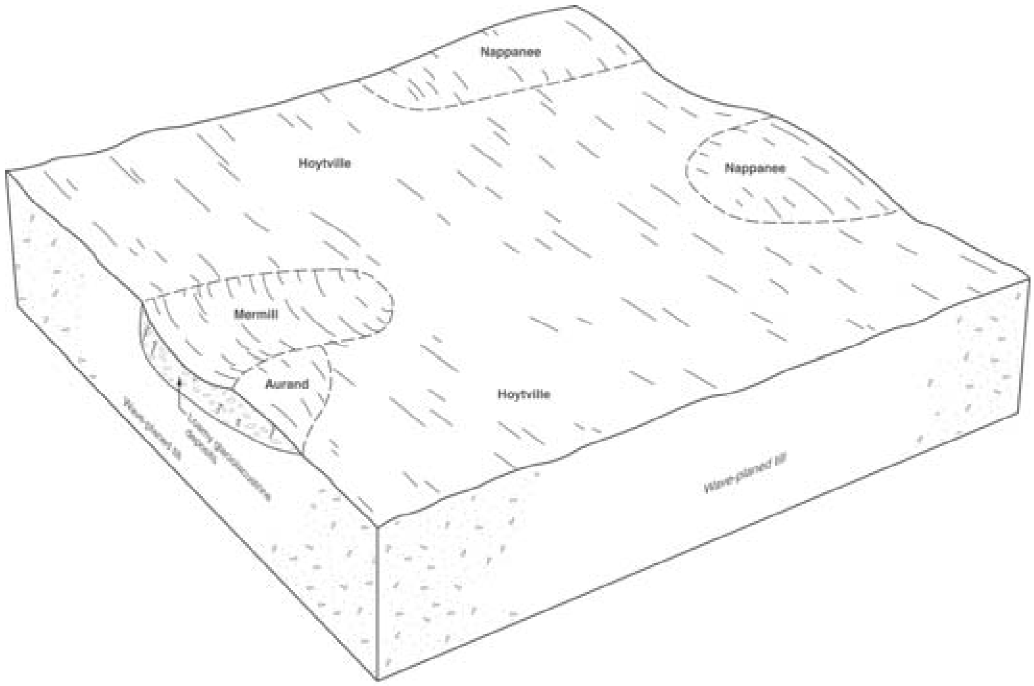


Figure 3.—Typical pattern of soils and parent material in the Hoytville association.

- Rimer and Tedrow soils
- Sloan soils
- Udorthents

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, compaction, frost action

2. Latty-Fulton Association

Very deep, level to gently sloping, very poorly drained and somewhat poorly drained soils that formed in clayey glaciolacustrine deposits over till (fig. 4)

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls and dissected areas along streams on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 3 percent
Extent of the soils in the association:
Latty soils that have a till substratum—72 percent
Fulton soils that have a till substratum—15 percent
Soils of minor extent—13 percent

Soil Properties and Qualities

Latty
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Clayey glaciolacustrine deposits over till
Texture of the surface layer: Silty clay
Slope: 0 to 1 percent

Fulton
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Clayey glaciolacustrine deposits over till
Texture of the surface layer: Silty clay loam
Slope: 0 to 6 percent

Soils of Minor Extent

- Nappanee soils
- Toledo soils
- Udorthents
- Wabasha soils

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, compaction, tilth, erosion, frost action

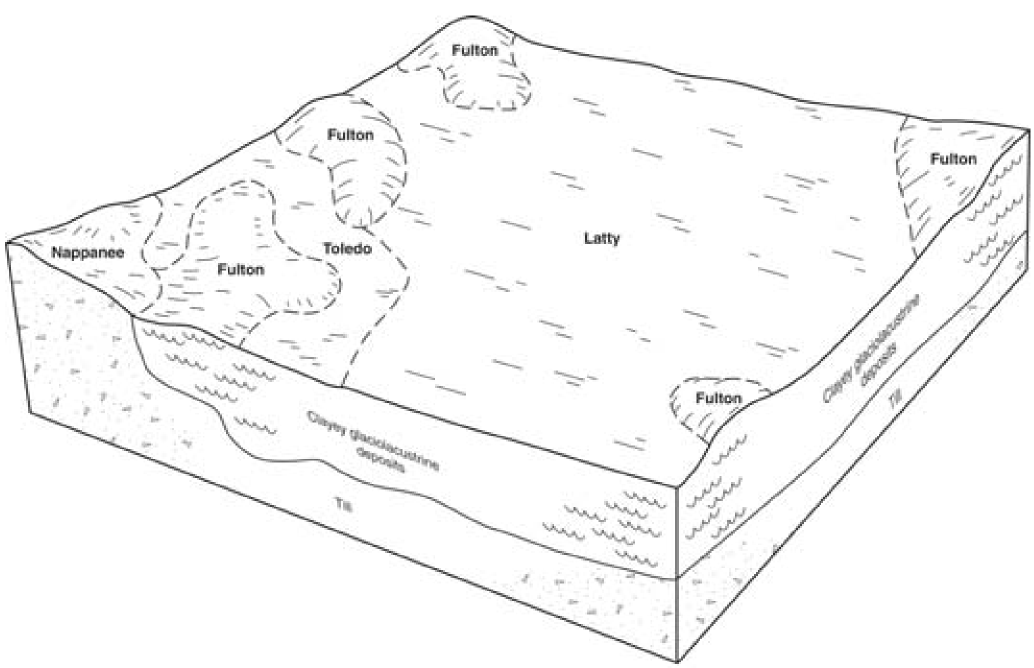


Figure 4.—Typical pattern of soils and parent material in the Latty-Fulton association.

3. Urban Land-Fulton-Latty Association

Urban land, or built-up land, and very deep, level to gently sloping, somewhat poorly drained and very poorly drained soils that formed in clayey glaciolacustrine deposits over till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls and dissected areas along streams on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 2 percent
Extent of the components in the association:
Urban land—27 percent
Fulton soils that have a till substratum—22 percent
Latty soils that have a till substratum—16 percent
Soils of minor extent—35 percent

General Description of Urban Land

- Urban land, or built-up land, includes areas that are covered by paved or graveled roads, parting lots, walkways, residential and commercial buildings, and cemetery structures.

Soil Properties and Qualities

Fulton
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Clayey glaciolacustrine deposits over till
Texture of the surface layer: Silty clay loam
Slope: 0 to 6 percent

Latty
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Clayey glaciolacustrine deposits over till
Texture of the surface layer: Silty clay
Slope: 0 to 1 percent

Soils of Minor Extent

- Aurand soils
- Genesee soils
- Sloan soils
- St. Clair soils
- Toledo soils

Use and Management

Major uses: Urban development
Management concerns: Seasonal wetness, ponding, high clay content in the surface layer and subsoil, slow or very slow permeability, the shrink-swell potential, frost action, low strength

4. Colwood-Kibbie-Granby Association

Very deep, level to gently sloping, very poorly drained, poorly drained, and somewhat poorly drained soils that formed in stratified loamy or silty glaciolacustrine deposits or in sandy glaciolacustrine deposits over till

Setting

Landform: Flats, depressions, drainageways, rises, and knolls on lake plains and deltas
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 3 percent
Extent of the soils in the association:
Colwood soils—37 percent
Kibbie soils—17 percent
Granby soils that have a till substratum—10 percent
Soils of minor extent—36 percent

Soil Properties and Qualities

Colwood
Depth class: Very deep
Drainage class: Very poorly drained and poorly drained
Parent material: Stratified silty and loamy glaciolacustrine deposits
Texture of the surface layer: Loam or fine sandy loam
Slope: 0 to 1 percent

Kibbie
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Stratified loamy and silty glaciolacustrine deposits
Texture of the surface layer: Loamy fine sand or fine sandy loam
Slope: 0 to 6 percent

Granby
Depth class: Very deep
Drainage class: Very poorly drained and poorly drained
Parent material: Sandy glaciolacustrine deposits over till
Texture of the surface layer: Loamy fine sand
Slope: 0 to 1 percent

Soils of Minor Extent

- Aurand soils
- Eel soils
- Hoytville soils
- Nappanee soils
- Mermill soils
- Ottokee and Spinks soils
- Rimer and Tedrow soils
- Seward and Ottokee soils
- Sloan soils
- Udorthents

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, wind erosion, droughtiness, ground-water contamination, frost action

5. Mermill-Aurand-Hoytville Association

Very deep, level or nearly level, very poorly drained and somewhat poorly drained soils that formed in loamy glaciolacustrine deposits and the underlying till or in wave-planed till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls on lake plains
Slope range: 0 to 2 percent

Composition

Extent of the association in the county: 14 percent
Extent of the soils in the association:
Mermill soils—35 percent
Aurand soils—19 percent
Hoytville soils—13 percent
Soils of minor extent—33 percent

Soil Properties and Qualities

Mermill
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Loamy glaciolacustrine deposits and the underlying till
Texture of the surface layer: Loam, fine sandy loam, or sandy clay loam
Slope: 0 to 1 percent

Aurand
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and footslopes
Parent material: Loamy glaciolacustrine deposits and the underlying till
Texture of the surface layer: Loam or fine sandy loam
Slope: 0 to 2 percent

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Landform: Extensive flats, depressions, and drainageways
Parent material: Wave-planed till
Texture of the surface layer: Silty clay, silty clay loam, or clay loam
Slope: 0 to 1 percent

Soils of Minor Extent

- Dunbridge soils
- Eel soils
- Ottokee and Spinks soils
- Nappanee soils

- Randolph soils
- Rimer and Tedrow soils
- Wauseon soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, restricted permeability, wind erosion, frost action, compaction, high clay content

6. Wauseon-Ottokee-Spinks Association

Very deep, level to moderately steep, very poorly drained, poorly drained, moderately well drained, and well drained soils that formed in loamy and sandy glaciolacustrine deposits over till or in sandy glaciolacustrine or eolian deposits

Setting

Landform: Flats, depressions, and drainageways on lake plains; rises and knolls on dunes and beach ridges on lake plains
Slope range: 0 to 18 percent

Composition

Extent of the association in the county: 4 percent
Extent of the soils in the association:
Wauseon soils—32 percent
Ottokee soils—21 percent
Spinks soils—13 percent
Soils of minor extent—34 percent

Soil Properties and Qualities

Wauseon
Depth class: Very deep
Drainage class: Poorly drained and very poorly drained
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Texture of the surface layer: Fine sandy loam or loamy fine sand
Slope: 0 to 1 percent

Ottokee
Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandy glaciolacustrine or eolian deposits
Texture of the surface layer: Loamy fine sand
Slope: 0 to 6 percent

Spinks
Depth class: Very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandy glaciolacustrine or eolian deposits
Texture of the surface layer: Fine sand or loamy fine sand
Slope: 2 to 18 percent

Soils of Minor Extent

- Aurand soils
- Digby soils
- Hoytville soils
- Mermill soils
- Nappanee soils
- Randolph soils
- Rimer and Tedrow soils
- Risingsun and Rollersville soils
- Shoals soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, droughtiness, wind erosion, water erosion, ground-water contamination

7. Hoytville-Ottokee-Rimer Association

Very deep, level to gently sloping, very poorly drained, moderately well drained, and somewhat poorly drained soils that formed in wave-planed till, in sandy glaciolacustrine or eolian deposits, or in sandy glaciolacustrine deposits and the underlying till

Setting

Landform: Extensive flats, depressions, drainageways, rises, and knolls on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 11 percent
Extent of the soils in the association:
Hoytville soils—64 percent
Ottokee soils—10 percent
Rimer soils—10 percent
Soils of minor extent—16 percent

Soil Properties and Qualities

Hoytville
Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wave-planed till
Texture of the surface layer: Clay loam
Slope: 0 to 1 percent

Ottokee
Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandy glaciolacustrine or eolian deposits
Texture of the surface layer: Loamy fine sand
Slope: 0 to 6 percent

Rimer
Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Sandy glaciolacustrine deposits and the underlying till
Texture of the surface layer: Loamy fine sand
Slope: 0 to 6 percent

Soils of Minor Extent

- Aurand soils
- Eel soils
- Mermill soils
- Nappanee soils
- Sloan soils
- Spinks soils, which are commonly closely associated with Ottokee soils
- Tedrow soils, which are commonly closely associated with Rimer soils
- Wauseon soils

Use and Management

Major uses: Cropland
Management concerns: Ponding, seasonal wetness, frost action, droughtiness, wind erosion, water erosion, ground-water contamination

8. Millsdale-Castalia-Milton Association

Moderately deep, very poorly drained and well drained soils that formed in till overlying limestone or dolostone or in loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin (fig. 5)

Setting

Landform: Flats, depressions, and drainageways on lake plains; rises and knolls on reefs on lake plains
Slope range: 0 to 6 percent

Composition

Extent of the association in the county: 3 percent
Extent of the soils in the association:
Millsdale soils—35 percent
Castalia soils—23 percent
Milton soils—18 percent
Components of minor extent—24 percent

Soil Properties and Qualities

Millsdale
Depth class: Moderately deep
Drainage class: Very poorly drained
Parent material: Till overlying limestone or dolostone
Texture of the surface layer: Silty clay loam or stony silty clay loam
Slope: 0 to 1 percent

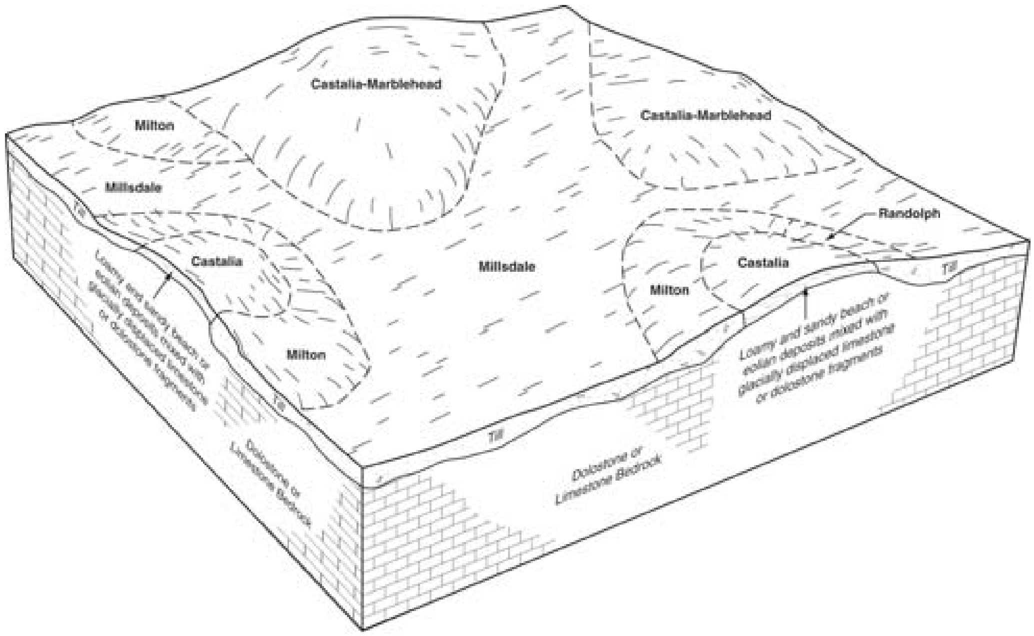


Figure 5.—Typical pattern of soils and parent material in the Millsdale-Castalia-Milton association.

Castalia
Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Texture of the surface layer: Very stony fine sandy loam or very cobbly loam
Slope: 0 to 6 percent

Milton
Depth class: Moderately deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, and backslopes
Parent material: Till overlying limestone or dolostone
Texture of the surface layer: Loam
Slope: 0 to 6 percent

Components of Minor Extent

- Dunbridge soils
- Spinks soils that are moderately deep to limestone
- Hoytville soils
- Marblehead soils, which commonly are closely associated with Castalia soils
- Mermill soils
- Nappanee soils
- Pits, quarry
- Randolph soils

Use and Management

Major uses: Woodland, pasture, and cropland
Management concerns: Ponding, seasonal wetness, droughtiness, high clay content, erosion, depth to bedrock, ground-water contamination, stoniness

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties might extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

The detailed map unit descriptions include management information related to most major uses of the soils: cropland, pastureland, woodland, building site development, septic tank absorption fields, and local roads and streets. The management information provided for a particular map unit addresses the most limiting features of that soil for a certain use. In some cases, specific measures that are suggested that may alleviate the effects of these limiting soil features. The mention of such management measures is not a recommendation, especially where current laws or programs may prohibit an activity, such as installation of drainage. Even the best management practices cannot overcome some limitations of the soil.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Aurand fine sandy loam, 0 to 2 percent slopes, is a phase of the Aurand series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Castalia-Marblehead complex, very stony, 0 to 6 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Haskins and Digby, till substratum, loams, 0 to 2 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, quarry, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Figure 6 shows the relationship between different geomorphic slope positions and slope terminology. These terms are generally not used in areas of low relief in Wood County. More detailed definitions of these terms are in the Glossary.

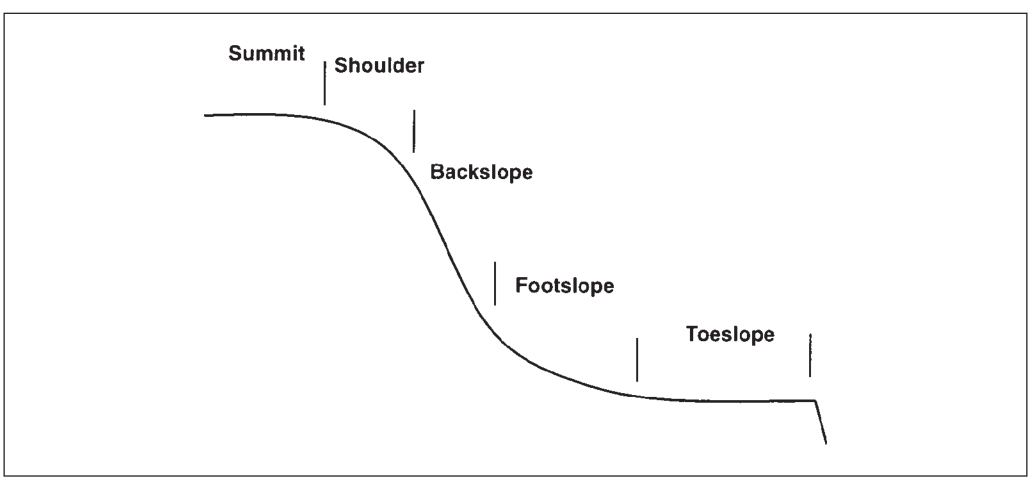


Figure 6.—Diagram showing the relationship between slope position and slope terminology (adapted from Ruhe, 1975).

AgA—Alvada loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 80 acres

Map Unit Composition

Alvada and similar soils: 95 percent

Similar soils:
- Soils in which the surface layer is less than 10 inches thick
- Soils that have till at a depth of 60 to 80 inches
- Soils that have a surface layer of clay loam

Contrasting components:
- Somewhat poorly drained soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 32 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy, sandy, and gravelly glaciolacustrine deposits overlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

AmA—Aurand fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and footslopes
Size of areas: 2 to 60 acres

Map Unit Composition

Aurand and similar soils: 90 percent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have till between depths of 40 and 60 inches
- Moderately well drained soils
- Soils in which the surface layer is less than 10 inches thick
- Soils that have more clay in the subsoil
- Soils that have a surface layer of sandy loam, loam, or clay loam
- Soils that have carbonates between depths of 15 and 25 inches
- Soils that have a stratified substratum between depths of 40 and 60 inches

Contrasting components:
- Mermill soils in depressions and drainageways: 7 percent
- Alvada soils in depressions and drainageways: 3 percent

Soil Properties and Qualities

Available water capacity: About 7.0 inches to a depth of 59 inches
Cation-exchange capacity in the surface layer: 8 to 23 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

AnA—Aurand loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Footslopes and summits
Size of areas: 2 to 40 acres

Map Unit Composition

Aurand and similar soils: 91 percent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have till at a depth of 40 to 60 inches
- Moderately well drained soils
- Soils that have a dark surface layer less than 10 inches thick
- Soils that have more clay and less sand in the subsoil

Contrasting components:
- Mermill soils in depressions and drainageways: 6 percent
- Alvada soils in depressions and drainageways: 3 percent

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 48 inches
Cation-exchange capacity in the surface layer: 9 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate

Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

AsA—Aurand-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and footslopes
Size of areas: 2 to 40 acres

Map Unit Composition

Aurand and similar soils: 50 percent
Urban land: 40 percent

Similar soils:
- Soils that have a lighter colored surface layer
- Moderately well drained soils
- Soils that have more clay in the subsoil
- Soils that have a surface layer of sandy loam, fine sandy loam, or clay loam
- Soils that have a stratified substratum between depths of 40 and 60 inches
- Soils in which the surface layer is less than 10 inches thick
- Soils that have till between depths of 40 and 60 inches

Contrasting components:
- Mermill soils in depressions and drainageways: 7 percent
- Alvada soils in depressions and drainageways: 3 percent

Soil Properties and Qualities

Aurand
Available water capacity: About 6.7 inches to a depth of 51 inches
Cation-exchange capacity in the surface layer: 9 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Aurand Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and

building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Aurand—none assigned; Urban land—none assigned
Hydric classification: Aurand—not hydric; Urban land—not applicable

BeB—Belmore sandy loam, 1 to 4 percent slopes

Setting

Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, backslopes, and shoulders
Size of areas: 2 to 20 acres

Map Unit Composition

Belmore and similar soils: 90 percent

Similar soils:
- Soils that have a seasonal high water table at a depth of 3.5 to 6.0 feet
- Soils that have till at a depth of 20 to 60 inches
- Soils that have a darker surface layer
- Soils that have a surface layer of loamy fine sand, loam, or fine sandy loam
- Well drained soils
- Soils that have less clay in the subsoil
- Soils that have slopes of 0 to 1 percent

Contrasting components:
- Soils that have bedrock at a depth of 20 to 40 inches: 10 percent

Soil Properties and Qualities

Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 15 milliequivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach deposits
Permeability: Moderately rapid in the solum and rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Sandy loam
Surface runoff class: Very low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Erosion control is needed when pastures are renovated.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland

Pasture and hayland suitability group: A-1
Hydric classification: Not hydric

BfB—Belmore loam, 1 to 4 percent slopes

Setting

Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, backslopes, and shoulders
Size of areas: 3 to 10 acres

Map Unit Composition

Belmore and similar soils: 100 percent

Similar soils:
- Soils that have a redder surface layer
- Soils that have a seasonal high water table at a depth of 3.5 to 6.0 feet
- Soils that have till at a depth of 40 to 60 inches
- Soils that have a darker surface layer
- Soils that have slopes of 0 to 1 percent
- Soils that have a surface layer of sandy loam

Soil Properties and Qualities

Available water capacity: About 7.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 20 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach deposits
Permeability: Moderately rapid in the solum and rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Erosion control is needed when pastures are renovated.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-1
Hydric classification: Not hydric

CaA—Castalia very cobbly loam, 0 to 2 percent slopes

Setting

Landform: Knolls and rises on reefs on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 70 acres

Map Unit Composition

Castalia and similar soils: 90 percent

Similar soils:
- Soils that contain less than 35 percent rock fragments in the surface layer and subsoil
- Soils that have a surface layer of loam, sandy loam, or fine sandy loam
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have more clay in the subsoil

Contrasting components:
- Marblehead soils in landform positions similar to those of the Castalia soil: 10 percent

Soil Properties and Qualities

Available water capacity: About 1.7 inches to a depth of 21 inches
Cation-exchange capacity in the surface layer: 11 to 28 milliequivalents per 100 grams

Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.7 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Very cobbly loam
Percent of surface covered by rock fragments: 0.1 percent
Surface runoff class: Very low
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.
- Rock fragments on the surface may restrict the operation of farm machinery during pasture renovation.

Woodland

- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may also cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Rock fragments in the soil also obstruct the use of mechanical planting equipment.
- Stones restrict the use of equipment during site preparation for planting or seeding.
- Burning may destroy organic matter.

Building site development

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

Septic tank absorption fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Interpretive Groups

Land capability classification: 6s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: F-1
Hydric classification: Not hydric

CbB—Castalia-Marblehead complex, very stony, 0 to 6 percent slopes

Setting

Landform: Knolls and rises on reefs on lake plains
Position on the landform: Backslopes, summits, and shoulders
Size of areas: 2 to 250 acres

Map Unit Composition

Castalia and similar soils: 60 percent
Marblehead and similar soils: 35 percent

Similar soils:
- Soils that have fewer stones on the surface
- Soils that have less than 35 percent rock fragments in the surface layer and subsoil
- Soils that have a surface layer of fine sandy loam or loam
- Soils that have bedrock at a depth of 10 to 20 inches
- Moderately well drained soils

Contrasting components:
- Rock outcrops on shoulders and summits: 5 percent

Soil Properties and Qualities

Castalia
Available water capacity: About 1.6 inches to a depth of 22 inches
Cation-exchange capacity in the surface layer: 11 to 28 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential for frost action: Moderate
Percent of surface covered by rock fragments: 3 percent
Shrink-swell potential: Low
Texture of the surface layer: Very stony fine sandy loam
Surface runoff class: Very low
Hazard of wind erosion: Slight

Marblehead
Available water capacity: About 1.1 inches to a depth of 6 inches

Cation-exchange capacity in the surface layer: 8 to 36 milliequivalents per 100 grams
Depth class: Very shallow
Depth to root-restrictive feature: 4 to 10 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 0.5 foot
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Content of organic matter in the surface layer: 3 to 12 percent
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: Moderate
Percent of surface covered by rock fragments: 3 percent
Shrink-swell potential: Low
Texture of the surface layer: Gravelly silt loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations Affecting the Castalia Soil

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation (fig. 7).

Woodland
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil also may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- The sandiness of the soil may reduce the traction of wheeled harvest equipment and log trucks.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Stones restrict the use of equipment during site preparation for planting or seeding.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Figure 7.—Stones on the surface in areas of Castalia-Marblehead complex, very stony, 0 to 6 percent slopes, can interfere with the use of farm machinery during pasture renovation.

- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Use and Management Considerations Affecting the Marblehead Soil

Cropland
- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Large stones restrict the use of most farm machinery.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The high content of stones or boulders on the surface may obstruct the construction of haul roads and log landings.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The volume of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- The depth to hard bedrock restricts the use of equipment during site preparation for planting or seeding and interferes with mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 6s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Castalia—F-1; Marblehead—E-1
Hydric classification: Castalia—not hydric; Marblehead—not hydric

CcA—Colwood fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 5 to 450 acres

Map Unit Composition

Colwood and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of loamy fine sand or loam
- Mermill soils
- Soils that have less clay in the subsoil
- Soils in which the surface layer is more than 10 inches thick
- Soils that have till at a depth of 40 to 60 inches
- Soils that have more clay in the subsoil

Contrasting components:
- Kibbie soils on rises: 5 percent
- Wauseon soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 27 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

Building site development

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

CdA—Colwood loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 5 to 150 acres

Map Unit Composition

Colwood and similar soils: 90 percent

Similar soils:

- Soils that have a surface layer of fine sandy loam
- Soils that have less clay in the subsoil
- Mermill soils
- Soils in which the surface layer is more than 10 inches thick

Contrasting components:

- Kibbie soils on rises: 5 percent
- Wauseon soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Available water capacity: About 11 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 32 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

CtA—Colwood-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas and lake plains
Size of areas: 3 to 30 acres

Map Unit Composition

Colwood and similar soils: 55 percent
Urban land: 35 percent

Similar soils:
- Soils that have a surface layer of fine sandy loam
- Mermill soils
- Soils in which the surface layer is more than 10 inches thick

Contrasting components:
- Kibbie soils on rises: 5 percent
- Wauseon soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Colwood
Available water capacity: About 11 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 32 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Stratified silty and loamy glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Potential for frost action: High
Shrink-swell potential: Low

Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Colwood Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Colwood—none assigned; Urban land—none assigned
Hydric classification: Colwood—hydric; Urban land—not applicable

CvA—Cygnet loam, 0 to 2 percent slopes

Setting

Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 100 acres

Map Unit Composition

Cygnet and similar soils: 90 percent

Similar soils:
- Soils that have till below a depth of 60 inches
- Soils that have a surface layer of fine sandy loam
- Soils that have more sand and less clay in the subsoil
- Soils that have more rock fragments in the upper part of the substratum
- Somewhat poorly drained soils that have till at a depth of 20 to 40 inches
- Well drained soils

Contrasting components:
- Alvada soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Available water capacity: About 8.4 inches to a depth of 53 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Systematic subsurface drainage will extend the period during which crops can be planted and harvested.

Pastureland
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 1
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-6
Hydric classification: Not hydric

CxB—Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes

Setting

Landform: Knolls and rises on reefs on lake plains
Position on the landform: Backslopes, summits, and shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Castalia and similar soils: 40 percent
Marblehead and similar soils: 30 percent
Urban land: 25 percent

Similar soils:
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have a surface layer of fine sandy loam or loam
- Soils that have less than 35 percent rock fragments in the surface layer and subsoil
- Moderately well drained soils
- Soils that have fewer stones on the surface

Contrasting components:
- Rock outcrops on shoulders and summits: 5 percent

Soil Properties and Qualities

Castalia
Available water capacity: About 1.6 inches to a depth of 22 inches
Cation-exchange capacity in the surface layer: 11 to 28 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.8 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Permeability: Rapid
Potential for frost action: Moderate

Percent of surface covered by rock fragments: 3 percent
Shrink-swell potential: Low
Texture of the surface layer: Very stony fine sandy loam
Surface runoff class: Very low
Hazard of wind erosion: Slight

Marblehead
Available water capacity: About 1.1 inches to a depth of 6 inches
Cation-exchange capacity in the surface layer: 8 to 36 milliequivalents per 100 grams
Depth class: Very shallow
Depth to root-restrictive feature: 4 to 10 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 0.5 foot
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Content of organic matter in the surface layer: 3 to 12 percent
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: Moderate
Percent of surface covered by rock fragments: 3 percent
Shrink-swell potential: Low
Texture of the surface layer: Gravelly silt loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Castalia Soil

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Because of the high content of rock fragments, excavation is difficult and cutbanks are unstable. Excavations and trench walls should be reinforced.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The high content of large stones affects the ease of excavation and grading.

Use and Management Considerations Affecting the Marblehead Soil

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Castalia—none assigned; Marblehead—none assigned; Urban land—none assigned
Hydric classification: Castalia—not hydric; Marblehead—not hydric; Urban land—not applicable

DgA—Digby sandy loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulders and summits
Size of areas: 2 to 75 acres

Map Unit Composition

Digby and similar soils: 95 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have less clay in the subsoil
- Moderately well drained soils
- Soils that have a surface layer of loam, fine sandy loam, or loamy fine sand
- Soils that have slopes of 2 to 6 percent
- Soils that have till at a depth of 40 to 60 inches
- Haskins soils and Digby soils that have a till substratum

Contrasting components:
- Well drained soils on knolls: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low

Texture of the surface layer: Sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

DhA—Digby loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 25 acres

Map Unit Composition

Digby and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of sandy loam or fine sandy loam
- Soils that have less clay in the subsoil
- Moderately well drained soils
- Haskins soils and Digby soils that have a till substratum
- Soils that have till at a depth of 40 to 60 inches
- Soils that have slopes of 2 to 6 percent
- Soils that have a darker surface layer

Contrasting components:
- Well drained soils on knolls: 10 percent

Soil Properties and Qualities

Available water capacity: About 6.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

DrA—Dunbridge sandy loam, 0 to 2 percent slopes

Setting

Landform: Knolls and rises on reefs on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 40 acres

Map Unit Composition

Dunbridge and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of loamy fine sand, fine sandy loam, or loam
- Soils that have less clay in the subsoil
- Soils that have slopes of 2 to 6 percent
- Soils that have bedrock at a depth of 10 to 18 inches

- Moderately well drained soils
- Soils that have bedrock at a depth of 42 to 60 inches
- Soils that have more stones on the surface
- Ritchey soils
- Milton soils

Contrasting components:
- Castalia soils in landform positions similar to those of the Dunbridge soil: 5 percent
- Marblehead soils in landform positions similar to those of the Dunbridge soil: 5 percent

Soil Properties and Qualities

Available water capacity: About 3.5 inches to a depth of 25 inches
Cation-exchange capacity in the surface layer: 6 to 15 milliequivalents per 100 grams
Depth class: Shallow to deep
Depth to root-restrictive feature: 18 to 42 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 2.5 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Bedrock may interfere with the construction of haul roads and log landings.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: F-1
Hydric classification: Not hydric

DsA—Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes

Setting

Landform: Knolls and rises on reefs on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 65 acres

Map Unit Composition

Dunbridge and similar soils: 47 percent
Spinks and similar soils: 43 percent

Similar soils:
- Ritchey soils
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loamy sand, loam, or fine sandy loam
- Milton soils
- Soils that have bedrock at a depth of 10 to 18 inches
- Soils that have a dark surface layer more than 10 inches thick

Contrasting components:
- Castalia soils in landform positions similar to those of the Dunbridge and Spinks soils: 5 percent
- Marblehead soils in landform positions similar to those of the Dunbridge and Spinks soils: 5 percent

Soil Properties and Qualities

Dunbridge
Available water capacity: About 3.1 inches to a depth of 30 inches
Cation-exchange capacity in the surface layer: 6 to 13 milliequivalents per 100 grams
Depth class: Shallow to deep
Depth to root-restrictive feature: 18 to 42 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 2.1 feet

Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Spinks
Available water capacity: About 4.2 inches to a depth of 51 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Deep
Depth to root-restrictive feature: 42 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 4.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Dunbridge Soil

Cropland
- The rooting depth of crops is restricted by bedrock.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- Bedrock may interfere with the construction of haul roads and log landings.
- Burning may destroy organic matter.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Use and Management Considerations Affecting the Spinks Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Dunbridge—F-1; Spinks—B-1
Hydric classification: Dunbridge—not hydric; Spinks—not hydric

DsB—Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes

Setting

Landform: Knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 40 acres

Map Unit Composition

Dunbridge and similar soils: 47 percent
Spinks and similar soils: 43 percent

Similar soils:
- Ritchey soils
- Soils that have less clay in the subsoil
- Soils that have a surface layer of fine sandy loam, sandy loam, loamy sand, or loam
- Milton soils
- Soils that have bedrock at a depth of 10 to 18 inches
- Soils that have stones or boulders on the surface or in the profile
- Soils that have slopes of 0 to 2 percent
- Soils that have a dark surface layer more than 10 inches thick

Contrasting components:
- Castalia soils in landform positions similar to those of the Dunbridge and Spinks soils: 5 percent
- Marblehead soils in landform positions similar to those of the Dunbridge and Spinks soils: 5 percent

Soil Properties and Qualities

Dunbridge
Available water capacity: About 3.1 inches to a depth of 25 inches
Cation-exchange capacity in the surface layer: 6 to 13 milliequivalents per 100 grams
Depth class: Shallow to deep
Depth to root-restrictive feature: 18 to 42 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 2.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand

Surface runoff class: Very low
Hazard of wind erosion: Severe

Spinks
Available water capacity: About 4.2 inches to a depth of 51 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Deep
Depth to root-restrictive feature: 42 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 4.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits overlying limestone or dolostone
Permeability: Moderately rapid or rapid
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Dunbridge Soil

Cropland
- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Burning may destroy organic matter.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Use and Management Considerations Affecting the Spinks Soil

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s

Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Dunbridge—F-1; Spinks—B-1
Hydric classification: Dunbridge—not hydric; Spinks—not hydric

EaA—Eel loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats, rises, and natural levees on flood plains
Size of areas: 2 to 50 acres

Map Unit Composition

Eel and similar soils: 100 percent

Similar soils:
- Soils that have a surface layer of fine sandy loam
- Soils that have less clay in the subsoil
- Soils that have bedrock between depths of 48 and 60 inches
- Well drained soils
- Somewhat poorly drained soils
- Soils that have slopes of 2 to 6 percent
- Soils that have a darker surface layer

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.

- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

EmA—Eel silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats, rises, and natural levees on flood plains
Size of areas: 3 to 100 acres

Map Unit Composition

Eel and similar soils: 100 percent

Similar soils:
- Soils that have a surface layer of loam or silty clay loam
- Well drained soils
- Soils that have less sand in the subsoil
- Soils that have bedrock at a depth of 48 to 60 inches
- A few scattered wet spots
- Somewhat poorly drained soils
- Soils that have a darker surface layer

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.

- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

EnA—Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 5 to 40 acres

Map Unit Composition

Eel and similar soils: 100 percent

Similar soils:
- Soils that have bedrock at a depth of 42 to 60 inches
- Soils that have a surface layer of loam
- Well drained soils that have a dark surface layer
- Soils that have less sand in the subsoil
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have less clay in the subsoil
- Soils that have carbonates on the surface
- Soils that have a darker surface layer

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 34 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 20 to 42 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 1.5 to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium overlying limestone and dolostone
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

FcA—Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flats, rises, and natural levees on flood plains
Size of areas: 5 to 75 acres

Map Unit Composition

Flatrock and similar soils: 90 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of loam
- Somewhat poorly drained soils
- Soils that have till at a depth of 60 to 80 inches
- Well drained soils

Contrasting components:
- Sloan soils in backswamps: 10 percent

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent the damage caused by flooding.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

FuA—Fulton silty clay loam, till substratum, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 100 acres

Map Unit Composition

Fulton and similar soils: 95 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Moderately well drained soils
- Soils that have a surface layer of silt loam
- Soils that have less clay in the subsoil
- Soils that have till below a depth of 80 inches
- Soils that have slopes of 2 to 6 percent
- Soils that formed in till

Contrasting components:
- Latty, till substratum, soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 15 to 30 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained

Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

FuB—Fulton silty clay loam, till substratum, 2 to 6 percent slopes

Setting

Landform: Rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 25 acres

Map Unit Composition

Fulton and similar soils: 95 percent

Similar soils:
- Soils that have slopes of 0 to 2 percent
- Moderately well drained soils that have till at a depth of 40 to 60 inches
- Soils that have a surface layer of silt loam, loam, or clay loam
- Eroded soils that have a thinner surface layer
- Soils that have till at a depth of 20 to 40 inches
- Soils that have slopes of 6 to 12 percent
- Soils that have carbonates at a depth of 10 to 22 inches

Contrasting components:
- Severely eroded areas that are very shallow to carbonates; on shoulders and backslopes: 5 percent

Soil Properties and Qualities

Available water capacity: About 7.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 15 to 30 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched

Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and

building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

FzA—Fulton, till substratum-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Shoulders and summits
Size of areas: 5 to 225 acres

Map Unit Composition

Fulton and similar soils: 60 percent
Urban land: 35 percent

Similar soils:
- Soils that have less clay in the subsoil
- Moderately well drained soils
- Soils that have a surface layer of silt loam
- Soils that have slopes of 2 to 6 percent
- Soils that formed in till
- Soils that have till at a depth of 40 to 60 inches
- Soils that have till below a depth of 80 inches

Contrasting components:
- Latty, till substratum, soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Fulton
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 15 to 30 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Clayey glaciolacustrine deposits overlying till
Permeability: Slow in the solum and in the lacustrine substratum and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Fulton Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Fulton—none assigned; Urban land—none assigned
Hydric classification: Fulton—not hydric; Urban land—not applicable

GmA—Genesee loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats, rises, and natural levees on flood plains
Size of areas: 2 to 60 acres

Map Unit Composition

Genesee and similar soils: 100 percent

Similar soils:
- Soils that are subject to occasional flooding
- Soils that have a surface layer of fine sandy loam, sandy loam, or silt loam
- Soils that have less clay in the subsoil
- Soils that have a darker surface layer that is more than 10 inches thick
- Moderately well drained soils
- Soils that have bedrock at a depth of 48 to 60 inches

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 2 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.

- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

GnA—Genesee silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats, rises, and natural levees on flood plains
Size of areas: 5 to 100 acres

Map Unit Composition

Genesee and similar soils: 100 percent

Similar soils:
- Soils in gently sloping areas along drainageways
- Soils that are subject to occasional flooding
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have a darker surface layer that is more than 10 inches thick

- Soils that have less sand in the subsoil
- Moderately well drained soils

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 2 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the

effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

GpA—Granby loamy fine sand, till substratum, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 2 to 30 acres

Map Unit Composition

Granby and similar soils: 85 percent

Similar soils:
- Soils that have more clay in the subsoil
- Soils that have a surface layer of fine sandy loam
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Tedrow soils on rises: 10 percent
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Granby soil: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 20 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum and substratum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate

Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 4w
Prime farmland classification: Not prime farmland

Pasture and hayland suitability group: C-1
Hydric classification: Hydric

HaA—Haney sandy loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 25 acres

Map Unit Composition

Haney and similar soils: 100 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Well drained soils
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loam, fine sandy loam, or loamy fine sand
- Soils that have a darker surface layer
- Somewhat poorly drained soils
- A few scattered wet or seepy spots

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 2.5 to 3.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-6
Hydric classification: Not hydric

HaB—Haney sandy loam, 2 to 6 percent slopes

Setting

Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 10 acres

Map Unit Composition

Haney and similar soils: 100 percent

Similar soils:
- Soils that have slopes of 0 to 2 percent
- Somewhat poorly drained soils
- Soils that have till at a depth of 40 to 60 inches
- Well drained soils
- A few scattered wet or seepy spots
- Soils that have less clay in the subsoil

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 2.5 to 3.0 feet
Kind of water table: Apparent

Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Sandy loam
Surface runoff class: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-6
Hydric classification: Not hydric

HdA—Haney loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains
Position on the landform: Shoulders and summits
Size of areas: 5 to 15 acres

Map Unit Composition

Haney and similar soils: 100 percent

Similar soils:
- Soils that have a surface layer of sandy loam or fine sandy loam
- Soils that have a darker surface layer
- Somewhat poorly drained soils
- Soils that have till at a depth of 20 to 40 inches
- Soils that have till at a depth of 40 to 60 inches
- Soils that have less clay in the subsoil
- A few scattered wet or seepy spots

Soil Properties and Qualities

Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 2.5 to 3.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-6
Hydric classification: Not hydric

HdB—Haney loam, 2 to 6 percent slopes

Setting

Landform: Knolls and rises on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 15 acres

Map Unit Composition

Haney and similar soils: 100 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of sandy loam, clay loam, or fine sandy loam
- Somewhat poorly drained soils
- Soils that have slopes of 0 to 2 percent
- Soils that have more clay in the subsoil
- Soils that have till at a depth of 20 to 40 inches
- Soils that have till at a depth of 40 to 60 inches
- Soils that have less clay in the subsoil
- Well drained soils
- A few scattered wet or seepy spots

Soil Properties and Qualities

Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches

Depth to the top of the seasonal high water table: 2.5 to 3.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Permeability: Moderate in the solum and rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- The root system of plants may be damaged by frost action.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland

Pasture and hayland suitability group: A-6
Hydric classification: Not hydric

HeA—Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 25 acres

Map Unit Composition

Haskins and similar soils: 46 percent
Digby, till substratum, and similar soils: 44 percent

Similar soils:
- Soils that have a darker surface layer
- Moderately well drained soils
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loam or sandy loam
- Kibbie, Nappanee, and Rimer soils

Contrasting components:
- Hoytville soils in depressions and drainageways: 5 percent
- Mermill soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Haskins
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Digby, till substratum
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched

Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Low
Hazard of wind erosion: Moderate

Use and Management Considerations Affecting the Haskins Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Digby Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.

- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
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Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Haskins—C-1; Digby—C-1
Hydric classification: Haskins—not hydric; Digby—not hydric

HeB—Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes

Setting

Landform: Knolls and rises on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 15 acres

Map Unit Composition

Haskins and similar soils: 46 percent
Digby, till substratum, and similar soils: 44 percent

Similar soils:
- Soils that have a surface layer of sandy loam
- Rimer, Nappanee, and Kibbie soils
- Moderately well drained soils
- Soils that have till at a depth of 42 to 60 inches
- Soils that have slopes of 0 to 2 percent

Contrasting components:
- Well drained soils on knolls: 10 percent

Soil Properties and Qualities

Haskins
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Low
Hazard of wind erosion: Moderate

Digby, till substratum
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 5 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits over till

Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Medium
Hazard of wind erosion: Moderate

Use and Management Considerations Affecting the Haskins Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Digby Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
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Woodland
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- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
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Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Haskins—C-1; Digby—C-1
Hydric classification: Haskins—not hydric; Digby—not hydric

HfA—Haskins and Digby, till substratum, loams, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 35 acres

Map Unit Composition

Haskins and similar soils: 46 percent
Digby, till substratum, and similar soils: 44 percent

Similar soils:
- Soils that have a darker surface layer
- Kibbie and Nappanee soils
- Moderately well drained soils
- Soils that have till at a depth of 42 to 60 inches
- Soils that have a surface layer of sandy loam or clay loam

Contrasting components:
- Hoytville soils in depressions and drainageways: 5 percent
- Mermill soils in depressions and drainageways: 5 percent

Soil Properties and Qualities

Haskins
Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Digby, till substratum
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam

Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations Affecting the Haskins Soil

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Digby Soil

Cropland
- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
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Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Haskins—C-1; Digby—C-1
Hydric classification: Haskins—not hydric; Digby—not hydric

HfB—Haskins and Digby, till substratum, loams, 2 to 6 percent slopes

Setting

Landform: Rises and knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 25 acres

Map Unit Composition

Haskins and similar soils: 46 percent
Digby, till substratum, and similar soils: 44 percent

Similar soils:
- Soils that have slopes of 0 to 2 percent
- Moderately well drained soils
- Soils that have a darker surface layer
- Soils that have more clay in the subsoil
- Kibbie and Nappanee soils

Contrasting components:
- Mermill soils in depressions and drainageways: 5 percent
- Well drained soils on knolls: 5 percent

Soil Properties and Qualities

Haskins
Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Digby, till substratum
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits over till
Permeability: Moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Medium
Hazard of wind erosion: Slight

Use and Management Considerations Affecting the Haskins Soil

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
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Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Digby Soil

Cropland

- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

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Woodland

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Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Haskins—C-1; Digby—C-1
Hydric classification: Haskins—not hydric; Digby—not hydric

HgA—Hoytville clay loam, 0 to 1 percent slopes

Setting

Landform: Depressions, drainageways, and extensive flats on lake plains
Size of areas: 5 to 10,000 acres

Map Unit Composition

Hoytville and similar soils: 95 percent

Similar soils:
- Soils that have carbonates between depths of 10 and 30 inches
- Soils that have less clay in the subsoil
- Soils that have a surface layer of silty clay loam
- Soils that have a dark surface layer more than 10 inches thick
- Soils that have a lighter colored surface layer
- Soils that have a surface layer of silty clay or clay
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Nappanee soils on rises: 4 percent
- Loamy or sandy, somewhat poorly drained soils on rises: 1 percent

Soil Properties and Qualities

Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 36 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water (fig. 8).
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Figure 8.—A recent installation of systematic tile drainage (a combination of subsurface drainage and open ditches) helps to remove excess water from the soil in areas of Hoytville clay loam, 0 to 1 percent slopes.

- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w

Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

HhA—Hoytville silty clay loam, 0 to 1 percent slopes

Setting

Landform: Drainageways, depressions, and extensive flats on lake plains
Size of areas: 5 to 100 acres

Map Unit Composition

Hoytville and similar soils: 95 percent

Similar soils:
- Soils that have more sand and less clay in the subsoil
- Soils that have a dark surface layer more than 10 inches thick
- Soils that have a lighter colored surface layer
- Soils that have a surface layer of silty clay or clay

Contrasting components:
- Nappanee soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 36 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

HvA—Hoytville silty clay, 0 to 1 percent slopes

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 15,000 acres

Map Unit Composition

Hoytville and similar soils: 95 percent

Similar soils:
- Soils that have a surface layer of silty clay loam or clay
- Soils that have a lighter colored surface layer
- Soils that have a thicker subsoil
- Soils that have a dark surface layer more than 10 inches thick
- Soils that have less clay in the subsoil

Contrasting components:
- Nappanee soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 22 to 41 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot (fig. 9)
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Figure 9.—Ponding in an area of Hoytville silty clay, 0 to 1 percent slopes.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil restricts the use of harvesting equipment and roads during wet periods.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

HwA—Hoytville clay, shallow to carbonates, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 80 acres

Map Unit Composition

Hoytville, shallow to carbonates, and similar soils: 95 percent

Similar soils:
- Soils that have bedrock at a depth of 48 to 60 inches
- Poorly drained soils
- Soils that have a surface layer of clay loam
- Soils that have less clay in the subsoil

Contrasting components:
- Nappanee soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 22 to 39 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface

Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil restricts the use of harvesting equipment and roads during wet periods.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

HyA—Hoytville-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 500 acres

Map Unit Composition

Hoytville and similar soils: 60 percent
Urban land: 35 percent

Similar soils:
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have carbonates between depths of 10 and 30 inches
- Soils that have a dark surface layer more than 10 inches thick
- Soils that have less clay in the subsoil
- Soils that have a lighter colored surface layer
- Soils that have a surface layer of silty clay loam
- Soils that have a surface layer of silty clay or clay

Contrasting components:
- Nappanee soils on rises: 4 percent
- Loamy or sandy, somewhat poorly drained soils: 1 percent

Soil Properties and Qualities

Hoytville
Available water capacity: About 6.9 inches to a depth of 57 inches
Cation-exchange capacity in the surface layer: 17 to 36 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Wave-planed till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Hoytville Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Hoytville—none assigned; Urban land—none assigned
Hydric classification: Hoytville—hydric; Urban land—not applicable

JoA—Joliet silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on reefs on lake plains
Size of areas: 2 to 25 acres

Map Unit Composition

Joliet and similar soils: 90 percent

Similar soils:
- Soils that have stones or boulders on the surface or in the profile
- Millsdale soils
- Soils that are less than 10 inches deep to bedrock
- Soils that have more clay in the subsoil
- Soils that have a surface layer of clay loam or loam

Contrasting components:
- Somewhat poorly drained soils on rises: 4 percent
- Castalia soils on knolls: 3 percent
- Marblehead soils on knolls: 3 percent

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 16 inches
Cation-exchange capacity in the surface layer: 19 to 31 milliequivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 5 percent
Parent material: Loamy glaciolacustrine deposits over limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock and the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4w
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: E-1
Hydric classification: Hydric

KeA—Kibbie loamy fine sand, 0 to 2 percent slopes

Setting

Landform: Rises on deltas on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 60 acres

Map Unit Composition

Kibbie and similar soils: 90 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have slopes of 2 to 6 percent
- Soils that have a darker surface layer
- Soils that have till at a depth of 40 to 60 inches
- Moderately well drained soils
- Soils that have a surface layer of fine sandy loam

Contrasting components:
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Kibbie soil: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum and moderate in the lower part of the solum and in the substratum

Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

KfA—Kibbie fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Rises on deltas on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 50 acres

Map Unit Composition

Kibbie and similar soils: 90 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Moderately well drained soils
- Soils that have less clay in the subsoil
- Soils that have more clay in the subsoil
- Soils that have a surface layer of loam or loamy fine sand
- Soils that have a darker surface layer

Contrasting components:
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Kibbie soil: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum and moderate in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

KfB—Kibbie fine sandy loam, 2 to 6 percent slopes

Setting

Landform: Rises and knolls on deltas on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 20 acres

Map Unit Composition

Kibbie and similar soils: 90 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Soils that have less clay in the subsoil
- Soils that have a darker surface layer
- Soils that have a surface layer of loam
- Moderately well drained soils

Contrasting components:
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Kibbie soil: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum and moderate in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Surface runoff class: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

KkA—Kibbie-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Rises on deltas on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 50 acres

Map Unit Composition

Kibbie and similar soils: 55 percent
Urban land: 35 percent

Similar soils:

- Soils that have a darker surface layer
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loam or loamy fine sand
- Moderately well drained soils
- Soils that have more clay in the subsoil
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:

- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Kibbie soil: 10 percent

Soil Properties and Qualities

Kibbie

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 18 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits
Permeability: Moderately rapid in the upper part of the solum and moderate in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Low

Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Kibbie Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Kibbie—none assigned; Urban land—none assigned
Hydric classification: Kibbie—not hydric; Urban land—not applicable

LbB—Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded

Setting

Landform: Rises and natural levees on flood plains
Size of areas: 2 to 20 acres

Map Unit Composition

Landes and similar soils: 95 percent

Similar soils:
- Moderately well drained soils
- Soils that have a seasonal high water table between depths of 4 and 6 feet
- Soils that have bedrock at a depth of 60 to 80 inches

- Soils that have less clay and more sand in the subsoil
- Soils that have a dark surface layer more than 20 inches thick

Contrasting components:
- Soils that have bedrock at a depth of 40 to 60 inches; in landform positions similar to those of the Landes soil: 5 percent

Soil Properties and Qualities

Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 4 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Content of organic matter in the surface layer: 1 to 2 percent
Parent material: Loamy and sandy alluvium
Permeability: Moderately rapid in the solum and rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland
- Erosion control is needed when pastures are renovated.
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

LdA—Latty silty clay, till substratum, 0 to 1 percent slopes

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 2,500 acres

Map Unit Composition

Latty, till substratum, and similar soils: 93 percent

Similar soils:

- Soils that have a darker surface layer
- Soils that have less clay in the subsoil
- Soils that have a surface layer of clay or silty clay loam

Contrasting components:

- Fulton soils on rises: 4 percent
- Nappanee soils on rises: 3 percent

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 22 to 43 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent

Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Clayey glaciolacustrine deposits over till
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Hydric

LgA—Latty, till substratum-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 260 acres

Map Unit Composition

Latty, till substratum, and similar soils: 63 percent
Urban land: 30 percent

Similar soils:
- Soils that have a surface layer of clay or silty clay loam
- Soils that have a darker surface layer
- Soils that have less clay in the subsoil

Contrasting components:
- Fulton soils on rises: 4 percent
- Nappanee soils on rises: 3 percent

Soil Properties and Qualities

Latty, till substratum
Available water capacity: About 6.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 22 to 43 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained

Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Clayey glaciolacustrine deposits over till
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Latty Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Latty—none assigned; Urban land—none assigned
Hydric classification: Latty—hydric; Urban land—not applicable

MbA—Millgrove loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 15 acres

Map Unit Composition

Millgrove and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of clay loam
- Soils that have a thinner subsoil

Contrasting components:
- Mermill soils in landform positions similar to those of the Millgrove soil: 5 percent
- Somewhat poorly drained soils that have a dark surface layer and that are on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 32 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and gravelly glaciolacustrine deposits
Permeability: Moderate in the upper part of the solum and moderately rapid in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

McA—Mermill fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 2 to 60 acres

Map Unit Composition

Mermill and similar soils: 90 percent

Similar soils:
- Soils that have carbonates at a depth of 20 to 24 inches
- Soils that have more clay in the subsoil
- Wauseon soils
- Soils that have a surface layer of clay loam or loam
- Soils that have till at a depth of 40 to 60 inches
- Soils that have till at a depth of 10 to 20 inches
- Soils that have a surface layer of loamy fine sand or sandy loam
- Soils in which the surface layer is more than 10 inches thick

Contrasting components:
- Somewhat poorly drained soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 7.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 24 milliequivalents per 100 grams
Depth class: Very deep

Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

MdA—Mermill loam, 0 to 1 percent slopes

Setting

Landform: Drainageways, depressions, and extensive flats on lake plains
Size of areas: 3 to 1,000 acres

Map Unit Composition

Mermill and similar soils: 90 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Soils that have more clay and less sand in the subsoil
- Soils in which the surface layer is more than 10 inches thick
- Soils that have a surface layer of clay loam or silty clay loam

Contrasting components:
- Aurand soils on rises: 7 percent
- Haskins soils on rises: 3 percent

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.

- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

MeA—Mermill sandy clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 250 acres

Map Unit Composition

Mermill and similar soils: 90 percent

Similar soils:
- Millgrove and Hoytville soils

- Soils in which the surface layer is more than 10 inches thick
- Soils that have carbonates on the surface
- Soils that have a surface layer of fine sandy loam or sandy loam
- Soils that have a surface layer of loam or clay loam
- Soils that have till at a depth of 10 to 20 inches
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Somewhat poorly drained soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 14 to 30 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Burning may destroy organic matter.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

MfA—Mermill-Aurand complex, 0 to 1 percent slopes

Setting

Landform: Mermill—depressions, drainageways, and extensive flats on lake plains; Aurand—rises and knolls on lake plains
Position on the landform: Aurand—shoulders and summits
Size of areas: 5 to 1,000 acres

Map Unit Composition

Mermill and similar soils: 60 percent
Aurand and similar soils: 35 percent

Similar soils:
- Soils that have less clay in the surface layer and subsoil
- Soils that have more clay in the surface layer and subsoil
- Moderately well drained soils
- Soils that have till between depths of 40 and 60 inches
- Soils that have a lighter colored surface layer
- Somewhat poorly drained, fine textured soils

Contrasting components:
- Rimer soils on rises and knolls: 5 percent

Soil Properties and Qualities

Mermill
Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches

Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Aurand

Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations Affecting the Mermill Soil

Cropland

- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Use and Management Considerations Affecting the Aurand Soil

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Mermill—C-1; Aurand—C-1
Hydric classification: Mermill—hydric; Aurand—not hydric

MgA—Mermill-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Depressions, drainageways, and flats on lake plains
Size of areas: 5 to 100 acres

Map Unit Composition

Mermill and similar soils: 60 percent
Urban land: 30 percent

Similar soils:
- Soils that have a surface layer of sandy clay loam or clay loam
- Soils that have more clay in the subsoil
- Soils in which the surface layer is more than 10 inches thick
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Aurand soils on rises: 5 percent
- Haskins soils on rises: 5 percent

Soil Properties and Qualities

Mermill
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till

Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Mermill Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Mermill—none assigned; Urban land—none assigned
Hydric classification: Mermill—hydric; Urban land—not applicable

MhA—Millsdale silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 3 to 150 acres

Map Unit Composition

Millsdale and similar soils: 90 percent

Similar soils:
- Soils that have a lighter colored surface layer
- Hoytville, Joliet, and Millgrove soils
- Soils that have a surface layer of clay loam, silt loam, or loam
- Soils in which the surface layer is 10 to 14 inches thick
- Soils that have bedrock at a depth of 40 to 60 inches

Contrasting components:
- Randolph soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 19 to 35 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 7 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock and a high clay content.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Hydric

MkA—Millsdale silty clay loam, stony, 0 to 1 percent slopes

Setting

Landform: Drainageways, depressions, and flats on lake plains
Size of areas: 3 to 30 acres

Map Unit Composition

Millsdale and similar soils: 90 percent

Similar soils:
- Soils in which the surface layer is 10 to 14 inches thick
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have boulders on the surface or stones and boulders in the profile
- Soils that have a surface layer of loam or silt loam
- Soils that have less clay in the subsoil
- Soils that have bedrock at a depth of 40 to more than 60 inches

Contrasting components:
- Randolph soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 19 to 35 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 7 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Percent of surface covered by rock fragments: 2 percent
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding and the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 6s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: C-2
Hydric classification: Hydric

MmA—Millsdale-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Drainageways, depressions, and flats on lake plains
Size of areas: 3 to 15 acres

Map Unit Composition

Millsdale and similar soils: 65 percent
Urban land: 25 percent

Similar soils:
- Joliet, Hoytville, and Millgrove soils
- Soils that have a surface layer of clay loam, silt loam, or loam
- Soils that have a lighter colored surface layer
- Soils in which the surface layer is 10 to 14 inches thick

Contrasting components:
- Randolph soils on rises: 10 percent

Soil Properties and Qualities

Millsdale
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 19 to 35 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 7 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Millsdale Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding and the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Millsdale—none assigned; Urban land—none assigned
Hydric classification: Millsdale—hydric; Urban land—not applicable

MnA—Milton loam, 0 to 2 percent slopes

Setting

Landform: Rises on reefs on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 200 acres

Map Unit Composition

Milton and similar soils: 90 percent

Similar soils:
- A few scattered wet spots
- Soils that have a darker surface layer
- Soils that have stones or boulders on the surface or in the profile
- Ritchey and Dunbridge soils
- Soils that have a surface layer of silt loam, sandy loam, or fine sandy loam

Contrasting components:
- Castalia soils in landform positions similar to those of the Milton soil: 5 percent
- Marblehead soils in landform positions similar to those of the Milton soil: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.2 inches to a depth of 26 inches
Cation-exchange capacity in the surface layer: 7 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 2.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent

Parent material: Till over dolostone or limestone
Permeability: Moderate or moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock and a high clay content.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2s
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: F-1
Hydric classification: Not hydric

MnB—Milton loam, 2 to 6 percent slopes

Setting

Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 35 acres

Map Unit Composition

Milton and similar soils: 90 percent

Similar soils:
- A few scattered wet spots
- Soils that have slopes of 0 to 2 percent
- Soils that have a darker surface layer
- Soils that have stones or boulders on the surface or in the profile
- Ritchey and Dunbridge soils
- Soils that have a surface layer of sandy loam or fine sandy loam
- Soils that have a surface layer of clay loam or silt loam

Contrasting components:
- Castalia soils in landform positions similar to those of the Milton soil: 5 percent
- Marblehead soils in landform positions similar to those of the Milton soil: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.2 inches to a depth of 26 inches
Cation-exchange capacity in the surface layer: 7 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 2.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till over dolostone or limestone
Permeability: Moderate or moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock and a high clay content.

- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: F-1
Hydric classification: Not hydric

NmA—Nappanee sandy loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 30 acres

Map Unit Composition

Nappanee and similar soils: 100 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have bedrock at a depth of 48 to 60 inches
- Rimer soils
- Soils that have loamy fine sand in the surface layer and the upper part of the solum
- Moderately well drained soils
- Soils that have a surface layer of loam, clay loam, or sandy clay loam

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy loam
Surface runoff class: Medium
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NmB—Nappanee sandy loam, 2 to 6 percent slopes

Setting

Landform: Rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Shoulders, summits, and backslopes
Size of areas: 2 to 20 acres

Map Unit Composition

Nappanee and similar soils: 100 percent

Similar soils:
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have slopes of 6 to 12 percent
- Soils that have less clay in the subsoil
- Moderately well drained soils
- Soils that have a surface layer of loam or clay loam
- Soils that have a surface layer of fine sandy loam

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 17 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy loam
Surface runoff class: High
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance.
- This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NnA—Nappanee loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 100 acres

Map Unit Composition

Nappanee and similar soils: 90 percent

Similar soils:
- Soils that have carbonates at a depth of 10 to 18 inches
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have a darker surface layer
- Soils that have a surface layer of clay loam, silt loam, silty clay loam, or sandy loam
- Moderately well drained soils
- Haskins soils

Contrasting components:
- Hoytville soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NnB—Nappanee loam, 2 to 6 percent slopes

Setting

Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 50 acres

Map Unit Composition

Nappanee and similar soils: 90 percent

Similar soils:
- Soils that have carbonates at a depth of 10 to 18 inches
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have a surface layer of silt loam
- Eroded soils that have a surface layer of clay loam or silty clay loam
- St. Clair soils

Contrasting components:
- Hoytville soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NnB2—Nappanee loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 15 acres

Map Unit Composition

Nappanee and similar soils: 90 percent

Similar soils:
- Soils that have a darker surface layer

- Soils that have carbonates at a depth of 10 to 18 inches
- Soils that are severely eroded
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have less clay in the subsoil
- St. Clair soils
- Soils that have a surface layer of clay loam
- Soils that have a surface layer of sandy loam, silt loam, or fine sandy loam

Contrasting components:
- Well drained soils on shoulders and summits: 10 percent

Soil Properties and Qualities

Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NpA—Nappanee silty clay loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 50 acres

Map Unit Composition

Nappanee and similar soils: 90 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have bedrock at a depth of 48 to 60 inches
- Moderately well drained soils
- Soils that have a surface layer of loam or clay loam

Contrasting components:
- Hoytville soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 29 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NpB—Nappanee silty clay loam, 2 to 6 percent slopes

Setting

Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 10 acres

Map Unit Composition

Nappanee and similar soils: 100 percent

Similar soils:
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have slopes of 0 to 2 percent
- Soils that have a surface layer of loam, silt loam, or clay loam
- St. Clair soils

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 29 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NpB2—Nappanee silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls, rises, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 10 acres

Map Unit Composition

Nappanee and similar soils: 90 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have a surface layer of silt loam; in areas that are not eroded
- Moderately well drained soils

Contrasting components:
- Severely eroded areas of soils that have a surface layer of silty clay or clay; on shoulders and backslopes: 5 percent
- Well drained soils on shoulders and summits: 5 percent

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 29 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

- Restricting grazing during wet periods can minimize compaction.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Not hydric

NsA—Nappanee-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 25 acres

Map Unit Composition

Nappanee and similar soils: 60 percent
Urban land: 30 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loam or clay loam
- Moderately well drained soils
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Hoytville soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Nappanee
Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 29 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Medium
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Nappanee Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Nappanee—none assigned; Urban land—none assigned
Hydric classification: Nappanee—not hydric; Urban land—not applicable

OsB—Oshtemo sandy loam, till substratum, 2 to 6 percent slopes

Setting

Landform: Knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 45 acres

Map Unit Composition

Oshtemo, till substratum, and similar soils: 95 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of loamy sand or loamy fine sand
- Moderately well drained soils
- Soils that have more clay and less sand in the subsoil
- Soils that have till at a depth of 40 to 60 inches
- Soils that have slopes of 0 to 2 percent

Contrasting components:
- Aurand soils on footslopes: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 60 inches

Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the top of the seasonal high water table: 3.5 to 6.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy and sandy beach deposits overlying till
Permeability: Moderately rapid in the subsoil, very rapid in the gravelly substratum, and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy loam
Surface runoff class: Very low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.

Pastureland
- Erosion control is needed when pastures are renovated.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3e

Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-1
Hydric classification: Not hydric

OtA—Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains; dunes and beach ridges on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 150 acres

Map Unit Composition

Ottokee and similar soils: 46 percent
Spinks and similar soils: 44 percent

Similar soils:
- Somewhat poorly drained soils
- Soils that have more clay in the subsoil
- Soils that have slopes of 2 to 6 percent
- Soils that have a surface layer of fine sand or fine sandy loam
- Soils that have till at a depth of 40 to 60 inches
- Soils that have a darker surface layer
- Well drained soils that do not have lamellae

Contrasting components:
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Ottokee and Spinks soils: 10 percent

Soil Properties and Qualities

Ottokee
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Spinks
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches

Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Ottokee Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Use and Management Considerations Affecting the Spinks Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Ottokee—B-1; Spinks—B-1
Hydric classification: Ottokee—not hydric; Spinks—not hydric

OtB—Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains; beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 75 acres

Map Unit Composition

Ottokee and similar soils: 51 percent
Spinks and similar soils: 49 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand or fine sandy loam
- Soils that have more clay in the subsoil
- Soils that have slopes of 0 to 2 percent
- Somewhat poorly drained soils
- Well drained soils that do not have lamellae
- Soils that have till at a depth of 40 to 60 inches

Soil Properties and Qualities

Ottokee
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Rapid
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Spinks
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Ottokee Soil

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion (fig. 10).
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

Figure 10.—A field windbreak in an area of Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes.

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Use and Management Considerations Affecting the Spinks Soil

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s

Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Ottokee—B-1; Spinks—B-1
Hydric classification: Ottokee—not hydric; Spinks—not hydric

OzB—Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes

Setting

Landform: Rises and knolls on lake plains; dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 5 to 100 acres

Map Unit Composition

Ottokee and similar soils: 36 percent
Spinks and similar soils: 34 percent
Urban land: 25 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand or fine sandy loam
- Soils that have more clay in the subsoil
- Soils that have till at a depth of 40 to 60 inches
- Well drained soils that do not have lamellae
- Somewhat poorly drained soils

Contrasting components:
- Soils that have till at a depth of 20 to 40 inches; in landform positions similar to those of the Ottokee and Spinks soils: 5 percent

Soil Properties and Qualities

Ottokee
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Rapid
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Spinks
Available water capacity: About 4.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches

Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Ottokee Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Use and Management Considerations Affecting the Spinks Soil

Building site development
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland

Pasture and hayland suitability group: Ottokee—none assigned; Spinks—none assigned; Urban land—none assigned
Hydric classification: Ottokee—not hydric; Spinks—not hydric; Urban land—not applicable

Pt—Pits, quarry

Setting

Landform: Lake plains and reefs on lake plains
Size of areas: 50 to 150 acres

Definition

- This map unit consists of areas that have been quarried.

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

RbA—Randolph loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 100 acres

Map Unit Composition

Randolph and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have bedrock at a depth of 10 to 20 inches
- Moderately well drained soils
- Soils that have a darker surface layer
- Soils that have less clay in the subsoil

Contrasting components:
- Soils that have bedrock at a depth of 4 to 10 inches; in landform positions similar to those of the Randolph soil: 2 percent
- Digby soils in landform positions similar to those of the Randolph soil: 2 percent
- Haskins soils in landform positions similar to those of the Randolph soil: 2 percent
- Millsdale soils in depressions and drainageways: 2 percent
- Nappanee soils in landform positions similar to those of the Randolph soil: 2 percent

Soil Properties and Qualities

Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone

Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock and a high clay content.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

RbB—Randolph loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 15 acres

Map Unit Composition

Randolph and similar soils: 90 percent

Similar soils:
- Soils that have stones or boulders on the surface or in the profile
- Moderately well drained soils
- Soils that have a darker surface layer
- Soils that have a surface layer of clay loam
- Soils that have less clay in the subsoil

Contrasting components:
- Nappanee soils in landform positions similar to those of the Randolph soil: 4 percent
- Digby soils in landform positions similar to those of the Randolph soil: 3 percent
- Haskins soils in landform positions similar to those of the Randolph soil: 3 percent

Soil Properties and Qualities

Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot

Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Very low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

RdA—Randolph loam, stony, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 3 to 25 acres

Map Unit Composition

Randolph and similar soils: 90 percent

Similar soils:
- Soils that have bedrock at a depth of 10 to 20 inches
- Moderately well drained soils
- Soils that have boulders on the surface or stones and boulders in the profile
- Soils that have a darker surface layer
- Soils that have a surface layer of sandy loam or fine sandy loam

Contrasting components:
- Castalia soils on shoulders and summits: 2 percent
- Digby soils on flats: 2 percent
- Haskins soils on flats: 2 percent
- Marblehead soils on shoulders and summits: 2 percent
- Nappanee soils on flats: 2 percent

Soil Properties and Qualities

Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Percent of surface covered by rock fragments: 2 percent
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 6s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

ReA—Randolph-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders

Map Unit Composition

Randolph and similar soils: 55 percent
Urban land: 35 percent

Similar soils:
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have a darker surface layer
- Moderately well drained soils
- Soils that have a surface layer of silt loam

Contrasting components:
- Soils that have bedrock at a depth of 4 to 10 inches; in landform positions similar to those of the Randolph soil: 2 percent
- Digby soils in landform positions similar to those of the Randolph soil: 2 percent
- Haskins soils in landform positions similar to those of the Randolph soil: 2 percent
- Millsdale soils in depressions and drainageways: 2 percent
- Nappanee soils in landform positions similar to those of the Randolph soil: 2 percent

Soil Properties and Qualities

Randolph
Available water capacity: About 5.3 inches to a depth of 32 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliequivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Randolph Soil

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Randolph—none assigned; Urban land—none assigned
Hydric classification: Randolph—not hydric; Urban land—not applicable

RfA—Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 50 acres

Map Unit Composition

Rimer and similar soils: 46 percent
Tedrow and similar soils: 44 percent

Similar soils:
- Soils that have more clay in the upper part of the solum
- Moderately well drained soils
- Soils that have till at a depth of 48 to 60 inches
- Soils that have a surface layer of fine sand, sandy loam, or fine sandy loam
- Soils that have a darker surface layer

Contrasting components:
- Wauseon soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Rimer
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High

Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Tedrow
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Rimer Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- Soil wetness may limit the use of this soil by log trucks.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Tedrow Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Rimer—C-1; Tedrow—C-1
Hydric classification: Rimer—not hydric; Tedrow—not hydric

RfB—Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 15 acres

Map Unit Composition

Rimer and similar soils: 46 percent
Tedrow and similar soils: 44 percent

Similar soils:
- Soils that have more clay in the subsoil
- Moderately well drained soils
- Soils that have slopes of 0 to 2 percent
- Soils that have a darker surface layer

- Soils that have a surface layer of fine sand, sandy loam, or fine sandy loam
- Soils that have till at a depth of 48 to 60 inches

Contrasting components:
- Wauseon soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Rimer
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Low
Hazard of wind erosion: Severe

Tedrow
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Low
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Rimer Soil

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.

- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Tedrow Soil

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Rimer—C-1; Tedrow—C-1
Hydric classification: Rimer—not hydric; Tedrow—not hydric

RgA—Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Rimer and similar soils: 34 percent
Tedrow and similar soils: 31 percent
Urban land: 25 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand, sandy loam, or fine sandy loam
- Moderately well drained soils
- Soils that have more clay in the upper part of the solum
- Soils that have till at a depth of 48 to 60 inches

Contrasting components:
- Wauseon soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Rimer
Available water capacity: About 4.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum

Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Tedrow
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy solum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Rimer Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Tedrow Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Rimer—none assigned; Tedrow—none assigned; Urban land—none assigned
Hydric classification: Rimer—not hydric; Tedrow—not hydric; Urban land—not applicable

RhA—Ritchey loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on reefs on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 30 acres

Map Unit Composition

Ritchey and similar soils: 90 percent

Similar soils:
- A few scattered wet spots
- Soils that have a calcareous surface layer
- Soils that have a surface layer of fine sandy loam or silt loam
- Milton and Dunbridge soils

- Soils that have bedrock at a depth of 4 to 10 inches
- Soils that have more clay in the subsoil
- Soils that have a darker surface layer

Contrasting components:
- The very stony Castalia soils in landform positions similar to those of the Ritchey soil: 6 percent
- The very stony Marblehead soils in landform positions similar to those of the Ritchey soil: 4 percent

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.3 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy till overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: E-1
Hydric classification: Not hydric

RhB—Ritchey loam, 2 to 6 percent slopes

Setting

Landform: Knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 25 acres

Map Unit Composition

Ritchey and similar soils: 90 percent

Similar soils:
- A few scattered wet spots
- Soils that have a darker surface layer
- Soils that have a surface layer of silt loam
- Soils that have stones or boulders on the surface or in the profile
- Milton and Dunbridge soils
- Soils that have slopes of 0 to 2 percent
- Soils that have more clay in the subsoil

Contrasting components:
- The very stony Castalia soils in landform positions similar to those of the Ritchey soil: 6 percent
- The very stony Marblehead soils in landform positions similar to those of the Ritchey soil: 4 percent

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams

Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.3 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy till overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: E-1
Hydric classification: Not hydric

RkA—Ritchey loam, stony, 0 to 2 percent slopes

Setting

Landform: Flats and rises on reefs on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Ritchey and similar soils: 90 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have boulders on the surface or stones and boulders in the profile
- Milton and Dunbridge soils
- Soils that have a surface layer of fine sandy loam or silt loam
- Soils that have more clay in the subsoil

Contrasting components:
- Rock outcrops in landform positions similar to those of the Ritchey soil: 4 percent
- The very stony Castalia soils in landform positions similar to those of the Ritchey soil: 3 percent
- The very stony Marblehead soils in landform positions similar to those of the Ritchey soil: 3 percent

Soil Properties and Qualities

Available water capacity: About 3.2 inches to a depth of 16 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliequivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 1.3 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy till overlying limestone or dolostone
Permeability: Moderate

Potential for frost action: Moderate
Percent of surface covered by rock fragments: 2 percent
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Stones or boulders on the surface obstruct the use of mechanical planting equipment.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 6s
Prime farmland classification: Not prime farmland

Pasture and hayland suitability group: E-1
Hydric classification: Not hydric

RmA—Risingsun-Rollersville complex, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 230 acres

Map Unit Composition

Risingsun and similar soils: 60 percent
Rollersville and similar soils: 35 percent

Similar soils:
- Soils that have more clay in the subsoil
- Soils that have a noncalcareous surface layer and subsoil
- Soils that have a surface layer of loam or loamy fine sand
- Soils that have till at a depth of 10 to 20 inches
- Soils that have till below a depth of 40 inches
- Soils that have a surface layer of mucky loamy fine sand
- Soils that have a dark mineral surface layer less than 10 inches thick

Contrasting components:
- Hoytville soils that are shallow to carbonates; in landform positions similar to those of the Risingsun and Rollersville soils: 5 percent

Soil Properties and Qualities

Risingsun
Available water capacity: About 7 inches to a depth of 43 inches
Cation-exchange capacity in the surface layer: 60 to 150 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 30 to 75 percent
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Muck
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Rollersville
Available water capacity: About 4.8 inches to a depth of 49 inches
Cation-exchange capacity in the surface layer: 7 to 23 milliequivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 7 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations Affecting the Risingsun Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps to minimize subsidence and prevent burning and can reduce the hazard of wind erosion.
- This soil may be deficient in micronutrients because of the high content of organic matter.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building

maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Use and Management Considerations Affecting the Rollersville Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Risingsun—D-1; Rollersville—C-1
Hydric classification: Risingsun—hydric; Rollersville—hydric

RnA—Rollersville-Risingsun complex, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 25 to 500 acres

Map Unit Composition

Rollersville and similar soils: 65 percent
Risingsun and similar soils: 35 percent

Similar soils:
- Soils that have a surface layer of loam or loamy fine sand
- Soils that have a dark mineral surface layer less than 10 inches thick
- Soils that have a surface layer of mucky loamy fine sand
- Soils that have till at a depth of 10 to 20 inches
- Soils that have till at a depth of 40 to 60 inches
- Soils that have till between depths of 60 and 80 inches

Soil Properties and Qualities

Rollersville
Available water capacity: About 5.4 inches to a depth of 52 inches
Cation-exchange capacity in the surface layer: 7 to 23 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material

Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 7 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Risingsun
Available water capacity: About 7.2 inches to a depth of 41 inches
Cation-exchange capacity in the surface layer: 60 to 150 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 30 to 75 percent
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Muck
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Rollersville Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The high pH in the soil may cause a nutrient imbalance in seedlings.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Risingsun Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps to minimize subsidence and prevent burning and can reduce the hazard of wind erosion.
- This soil may be deficient in micronutrients because of the high content of organic matter.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: Rollersville—C-1; Risingsun—D-1
Hydric classification: Rollersville—hydric; Risingsun—hydric

RsA—Rossburg silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Rises, flats, and natural levees on flood plains
Size of areas: 5 to 45 acres

Map Unit Composition

Rossburg and similar soils: 100 percent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that have a surface layer of loam
- Moderately well drained soils
- Soils in which the surface layer is less than 10 inches thick
- Soils that have less sand in the subsoil
- Soils that have bedrock at a depth of 60 to 80 inches

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 32 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Content of organic matter in the surface layer: 4 to 8 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Controlling traffic can minimize soil compaction.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric classification: Not hydric

SdA—Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains; dunes and beach ridges on lake plains
Position on the landform: Shoulders and summits
Size of areas: 2 to 25 acres

Map Unit Composition

Seward and similar soils: 46 percent
Ottokee and similar soils: 44 percent

Similar soils:
- Soils that have till at a depth of 48 to 60 inches
- Soils that have a stratified sandy and silty substratum
- A few scattered wet or seepy areas
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand, fine sandy loam, sandy loam, or sand
- Somewhat poorly drained soils
- Soils that have a sandy layer less than 18 inches thick
- Soils that have more clay in the subsoil

Contrasting components:
- Hoytville soils in depressions and drainageways: 4 percent
- Mermill soils in depressions and drainageways: 3 percent
- Wauseon soils in depressions and drainageways: 3 percent

Soil Properties and Qualities

Seward
Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Ottokee
Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy glaciolacustrine material and slow or very slow in the till substratum
Potential for frost action: Low
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Seward Soil

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Use and Management Considerations Affecting the Ottokee Soil

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- This soil is well suited to use as a site for local roads and streets.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Seward—B-1; Ottokee—B-1
Hydric classification: Seward—not hydric; Ottokee—not hydric

SdB—Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains; dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 25 acres

Map Unit Composition

Seward and similar soils: 46 percent
Ottokee and similar soils: 44 percent

Similar soils:
- Soils that have slopes of 0 to 2 percent
- Soils that have a stratified loamy and silty substratum
- Somewhat poorly drained soils
- Soils that have a sandy layer less than 18 inches thick
- A few scattered wet or seepy areas
- Well drained soils that have a water table at a depth of 3 to 6 feet
- Soils that have a surface layer of fine sand, fine sandy loam, sandy loam, or sand
- Soils that have a darker surface layer
- Soils that have till at a depth of 48 to 60 inches

Contrasting components:
- Hoytville soils in depressions and drainageways: 4 percent
- Mermill soils in depressions and drainageways: 3 percent
- Wauseon soils in depressions and drainageways: 3 percent

Soil Properties and Qualities

Seward

Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 15 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine deposits and the underlying till
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Ottokee

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 10 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy glaciolacustrine deposits overlying till
Permeability: Rapid in the sandy glaciolacustrine material and slow or very slow in the till substratum
Potential for frost action: Low
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations Affecting the Seward Soil

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Use and Management Considerations Affecting the Ottokee Soil

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.

- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Seward—B-1; Ottokee—B-1
Hydric classification: Seward—not hydric; Ottokee—not hydric

SeA—Shawtown loam, 0 to 2 percent slopes

Setting

Landform: Rises on beach ridges on lake plains
Position on the landform: Summits and shoulders
Size of areas: 2 to 10 acres

Map Unit Composition

Shawtown and similar soils: 98 percent

Similar soils:

- Soils that have less clay and more sand in the subsoil
- Well drained soils
- Soils that have a surface layer of sandy loam or fine sandy loam
- Soils that have a darker surface layer

Contrasting components:

- Alvada soils in depressions and drainageways: 2 percent

Soil Properties and Qualities

Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- This soil is well suited to cropland.

Pastureland
- This soil is well suited to pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-1
Hydric classification: Not hydric

SeB—Shawtown loam, 2 to 6 percent slopes

Setting

Landform: Knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 45 acres

Map Unit Composition

Shawtown and similar soils: 98 percent

Similar soils:
- Soils that have less clay and more sand in the subsoil
- Soils that have till at a depth of 40 to 50 inches
- Well drained soils
- Soils that have a surface layer of sandy loam or fine sandy loam
- Soils that have till below a depth of 70 inches
- Soils that have slopes of 0 to 2 percent
- Soils that have slopes of 6 to 12 percent

Contrasting components:
- Aurand soils on flats: 2 percent

Soil Properties and Qualities

Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

Pastureland
- Erosion control is needed when pastures are renovated.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments in the soil obstruct the use of mechanical planting equipment.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: A-1
Hydric classification: Not hydric

SgA—Shoals loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 3 to 30 acres

Map Unit Composition

Shoals and similar soils: 100 percent

Similar soils:
- Soils that have a surface layer of fine sandy loam or clay loam
- Soils that have a darker surface layer
- Moderately well drained soils
- Soils that have bedrock between depths of 48 and 60 inches

Soil Properties and Qualities

Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 24 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Not hydric

ShA—Shoals silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 3 to 60 acres

Map Unit Composition

Shoals and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of loam
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have a darker surface layer
- Soils that have less sand in the subsoil
- Moderately well drained soils

Contrasting components:
- Sloan soils in depressions and backswamps: 10 percent

Soil Properties and Qualities

Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 24 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.

- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Not hydric

SkA—Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 2 to 25 acres

Map Unit Composition

Shoals and similar soils: 90 percent

Similar soils:
- Soils that have till at a depth of 40 to 60 inches
- Soils that have a darker surface layer
- Soils that have a surface layer of loam or clay loam
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have more clay in the subsoil

Contrasting components:
- Sloan soils in depressions and backswamps: 10 percent

Soil Properties and Qualities

Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 15 to 27 milliequivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Not hydric

SmA—Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Shoals—flats and rises on flood plains; Sloan—flats and backswamps on flood plains
Size of areas: 3 to 35 acres

Map Unit Composition

Shoals and similar soils: 51 percent
Sloan and similar soils: 49 percent

Similar soils:
- Soils that have bedrock at a depth of 42 to 60 inches
- Soils that are subject to occasional flooding
- Soils that have bedrock at a depth of 10 to 20 inches
- Soils that have slopes of 2 to 6 percent
- Soils that have more silt in the subsoil
- Moderately well drained soils
- Soils that have a dark surface layer less than 10 inches thick
- Soils that have more clay in the subsoil

Soil Properties and Qualities

Shoals
Available water capacity: About 6.1 inches to a depth of 31 inches
Cation-exchange capacity in the surface layer: 11 to 24 milliequivalents per 100 grams

Depth class: Moderately deep or deep
Depth to root-restrictive feature: 20 to 42 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy alluvium over limestone and dolostone
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Sloan
Available water capacity: About 4.4 inches to a depth of 24 inches
Cation-exchange capacity in the surface layer: 17 to 33 milliequivalents per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 20 to 42 inches to bedrock (lithic)
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy alluvium overlying limestone and dolostone
Permeability: Moderately slow or moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations Affecting the Shoals Soil

Cropland
- The rooting depth of crops is restricted by bedrock.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Subsurface drainage helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Use and Management Considerations Affecting the Sloan Soil

Cropland
- The rooting depth of crops is restricted by bedrock.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- A combination of surface and subsurface drainage helps to remove excess water.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the

effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding and the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: Shoals—C-3; Sloan—B-3
Hydric classification: Shoals—not hydric; Sloan—hydric

SnA—Sloan silt loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Backswamps and flats on flood plains
Size of areas: 5 to 50 acres

Map Unit Composition

Sloan and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of silty clay loam
- Soils that have a thinner surface layer
- Soils that have a surface layer of loam
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Shoals soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: Frequent

Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Hydric

SoA—Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 20 to 150 acres

Map Unit Composition

Sloan and similar soils: 95 percent

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have till at a depth of 60 to 80 inches
- Soils that have more clay and less sand in the subsoil
- Soils in which the surface layer is less than 10 inches thick
- Soils that have a lighter colored surface layer

Contrasting components:
- Shoals soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 33 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot

Drainage class: Very poorly drained
Flooding: Occasional
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to use as homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent the damage caused by flooding.

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-3
Hydric classification: Hydric

SpA—Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 5 to 275 acres

Map Unit Composition

Sloan and similar soils: 90 percent

Similar soils:
- Soils in which the surface layer is less than 10 inches thick
- Soils that have more clay in the subsoil
- Soils that have a surface layer of silt loam or clay loam
- Soils that have till at a depth of 40 to 60 inches
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Eel soils on rises: 5 percent
- Shoals soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 33 milliequivalents per 100 grams
Depth class: Very deep

Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy alluvium
Permeability: Moderately slow or moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Hydric

SrB—Spinks fine sand, 2 to 6 percent slopes

Setting

Landform: Rises and knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 25 acres

Map Unit Composition

Spinks and similar soils: 90 percent

Similar soils:
- Soils that have lamellae below a depth of 40 inches
- Soils that have less than 6 inches of lamellae
- Soils that have slopes of 0 to 2 percent
- Soils that have a seasonal high water table at a depth of 48 to 60 inches
- Moderately well drained soils
- Soils that have a darker surface layer
- Soils that do not have lamellae
- Soils that have a surface layer of loamy fine sand or sand

Contrasting components:
- Tedrow soils on flats and seeps: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets
• This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric classification: Not hydric

SrC—Spinks fine sand, 6 to 12 percent slopes

Setting

Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Backslopes, summits, and shoulders
Size of areas: 5 to 40 acres

Map Unit Composition

Spinks and similar soils: 90 percent

Similar soils:
• Soils that have lamellae below a depth of 40 inches
• Soils that have a surface layer of loamy fine sand or sand
• Soils that do not have lamellae
• Soils that have a darker surface layer
• Moderately well drained soils
• Soils that have slopes of 2 to 6 percent
• Soils that have a seasonal high water table at a depth of 48 to 60 inches

Contrasting components:
• Soils that have slopes of 0 to 2 percent: 5 percent
• Tedrow soils on flats and seeps: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building site development
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local roads and streets
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric classification: Not hydric

SrD—Spinks fine sand, 12 to 18 percent slopes

Setting

Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 15 acres

Map Unit Composition

Spinks and similar soils: 90 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that do not have lamellae
- Soils that have a surface layer of sand
- Soils that have slopes of 6 to 12 percent
- Soils that have a seasonal high water table at a depth of 48 to 60 inches

Contrasting components:
- Soils that have slopes of 0 to 6 percent: 5 percent
- Tedrow soils on flats and seeps: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building site development
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local roads and streets
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric classification: Not hydric

SsB—Spinks loamy fine sand, 2 to 6 percent slopes

Setting

Landform: Knolls and rises on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 40 acres

Map Unit Composition

Spinks and similar soils: 90 percent

Similar soils:
- Soils that have a stratified loamy and silty substratum
- Soils that have till at a depth of 40 to 60 inches
- Soils that have slopes of 6 to 12 percent
- Soils that have a surface layer of fine sand
- Soils that do not have lamellae
- Soils that have slopes of 0 to 2 percent
- Soils that have a darker surface layer
- Moderately well drained soils
- Soils that have a seasonal high water table between depths of 48 and 60 inches

Contrasting components:
- Tedrow soils on flats and seeps: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Burning may destroy organic matter.

Building site development

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- This soil is well suited to use as a site for local roads and streets.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric classification: Not hydric

SsC—Spinks loamy fine sand, 6 to 12 percent slopes

Setting

Landform: Knolls on dunes and beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 3 to 20 acres

Map Unit Composition

Spinks and similar soils: 90 percent

Similar soils:

- Soils that have a surface layer of sand or fine sand
- Soils that have a seasonal high water table between depths of 48 and 60 inches
- Soils that have a darker surface layer
- Soils that do not have lamellae
- Ottokee soils
- Soils that have slopes of 2 to 6 percent

Contrasting components:

- Tedrow soils on flats and seeps: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 2 to 13 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: More than 4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian or glaciolacustrine deposits
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Potential for frost action: Low
Shrink-swell potential: Low

Texture of the surface layer: Loamy fine sand
Surface runoff class: Very low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building site development
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local roads and streets
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Not prime farmland

Pasture and hayland suitability group: B-1
Hydric classification: Not hydric

StB—St. Clair loam, 2 to 6 percent slopes

Setting

Landform: Knolls and rises and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 20 acres

Map Unit Composition

St. Clair and similar soils: 90 percent

Similar soils:
- Somewhat poorly drained soils
- Soils that have bedrock at a depth of 48 to 60 inches
- Soils that have less clay in the subsoil
- Soils that have a surface layer of silt loam
- Soils that have slopes of 0 to 2 percent
- Eroded soils that have a surface layer of clay loam

Contrasting components:
- Severely eroded soils that have carbonates between depths of 9 and 18 inches: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- The rooting depth of crops may be restricted by the high clay content.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

StC2—St. Clair loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes and shoulders
Size of areas: 2 to 15 acres

Map Unit Composition

St. Clair and similar soils: 90 percent

Similar soils:
- Soils that have slopes of 12 to 18 percent
- Soils that have a surface layer of silt loam or clay loam
- Soils that have less clay in the subsoil
- Nappanee soils
- Slightly eroded soils
- Well drained soils
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Severely eroded soils that have carbonates on the surface: 5 percent
- Soils that have slopes of 18 to 25 percent: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Surface runoff class: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.

- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland
- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

SuB2—St. Clair silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls and rises and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Size of areas: 2 to 10 acres

Map Unit Composition

St. Clair and similar soils: 100 percent

Similar soils:
- Somewhat poorly drained soils
- Severely eroded soils that have carbonates at a depth of 9 to 18 inches
- Soils that have less clay in the subsoil
- Slightly eroded soils
- Soils that have a surface layer of clay loam or silt loam
- Soils that have slopes of 0 to 2 percent
- Soils that have slopes of 6 to 12 percent
- Soils that have bedrock at a depth of 48 to 60 inches

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland classification: Prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

SuC2—St. Clair silty clay loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes and shoulders
Size of areas: 2 to 15 acres

Map Unit Composition

St. Clair and similar soils: 90 percent

Similar soils:

- Fulton and Nappanee soils
- Soils that have slopes of 12 to 18 percent
- Soils that have slopes of 2 to 6 percent
- Soils that have less clay in the subsoil
- Soils that have a surface layer of clay loam, silt loam, or loam
- Soils that have bedrock at a depth of 48 to 60 inches
- Severely eroded soils that have carbonates at a depth of 9 to 18 inches

Contrasting components:

- Severely eroded soils that have carbonates on the surface: 5 percent
- Soils that have slopes of 18 to 40 percent: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent

Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland
- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

SuD2—St. Clair silty clay loam, 12 to 18 percent slopes, eroded

Setting

Landform: Dissected areas along streams on lake plains
Position on the landform: Backslopes and shoulders
Size of areas: 3 to 20 acres

Map Unit Composition

St. Clair and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of fine sandy loam, clay loam, or loam
- Well drained soils
- Soils that have slopes of 6 to 12 percent
- Soils that have less clay in the subsoil
- Slightly eroded soils
- Soils that have slopes of 18 to 25 percent
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Severely eroded soils that have carbonates on the surface: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland
- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

SuE2—St. Clair silty clay loam, 18 to 25 percent slopes, eroded

Setting

Landform: Dissected areas on lake plains
Position on the landform: Backslopes and shoulders
Size of areas: 5 to 60 acres

Map Unit Composition

St. Clair and similar soils: 90 percent

Similar soils:
- Slightly eroded soils
- Soils that have less clay in the subsoil
- Soils that have slopes of 12 to 18 percent
- Soils that have slopes of 25 to 35 percent
- Soils that have a surface layer of clay loam, silt loam, or loam
- Well drained soils
- Soils that have bedrock at a depth of 48 to 60 inches

Contrasting components:
- Severely eroded soils that have carbonates on the surface: 5 percent
- Soils that have slopes of 6 to 12 percent: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 12 to 28 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Wave-planed till
Permeability: Slow in the solum and very slow or slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland
- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland
- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: F-5
Hydric classification: Not hydric

TeA—Tedrow loamy fine sand, 0 to 2 percent slopes

Setting

Landform: Rises on dunes and beach ridges on lake plains
Position on the landform: Shoulders and summits
Size of areas: 3 to 35 acres

Map Unit Composition

Tedrow and similar soils: 90 percent

Similar soils:
- Soils that have a stratified loamy and silty substratum
- Soils that have more clay in the subsoil
- Moderately well drained soils
- Soils that have till at a depth of 40 to 60 inches
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand or fine sandy loam
- Rimer soils

Contrasting components:
- Granby soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Burning may destroy organic matter.

Building site development

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

TeB—Tedrow loamy fine sand, 2 to 6 percent slopes

Setting

Landform: Rises and knolls on dunes and beach ridges on lake plains
Position on the landform: Backslopes, summits, and shoulders
Size of areas: 2 to 20 acres

Map Unit Composition

Tedrow and similar soils: 100 percent

Similar soils:

- Soils that have slopes of 0 to 2 percent
- Soils that have a stratified loamy and silty substratum
- Rimer soils
- Soils that have a surface layer of fine sand or fine sandy loam
- Soils that have a darker surface layer
- Soils that have till at a depth of 40 to 60 inches
- Moderately well drained soils

Soil Properties and Qualities

Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet

Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic material into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may be affected by moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Subsurface drainage helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer in this soil.

Pastureland
- Erosion control is needed when pastures are renovated.
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Burning may destroy organic matter.

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 3s
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: C-1
Hydric classification: Not hydric

TfA—Tedrow-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Rises on dunes and beach ridges on lake plains
Position on the landform: Summits and shoulders
Size of areas: 5 to 90 acres

Map Unit Composition

Tedrow and similar soils: 60 percent
Urban land: 30 percent

Similar soils:
- Soils that have a darker surface layer
- Soils that have a surface layer of fine sand or fine sandy loam
- Moderately well drained soils
- Soils that have more clay in the subsoil
- Soils that have a stratified loamy and silty substratum
- Rimer soils
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Granby soils in depressions and drainageways: 10 percent

Soil Properties and Qualities

Tedrow
Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 12 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Depth to the top of the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Apparent
Ponding: None

Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy glaciolacustrine or eolian deposits
Permeability: Rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Tedrow Soil

Building site development
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. This soil is poorly suited to building site development. Special structural design may be needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Tedrow—none assigned; Urban land—none assigned
Hydric classification: Tedrow—not hydric; Urban land—not applicable

TpA—Toledo silty clay loam, 0 to 1 percent slopes

Setting

Landform: Extensive flats, depressions, and drainageways on lake plains
Size of areas: 5 to 200 acres

Map Unit Composition

Toledo and similar soils: 90 percent

Similar soils:
- Soils in which the surface layer is more than 10 inches thick
- Soils that have a surface layer of silty clay
- Hoytville soils
- Soils that have a lighter colored surface layer
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Fulton soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 36 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Clayey glaciolacustrine deposits
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-2
Hydric classification: Hydric

TuA—Toledo-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 10 to 300 acres

Map Unit Composition

Toledo and similar soils: 55 percent
Urban land: 35 percent

Similar soils:
- Soils that have a lighter colored surface layer

- Soils that have a surface layer of silty clay
- Hoytville soils
- Soils in which the surface layer is more than 10 inches thick
- Soils that have till at a depth of 40 to 60 inches

Contrasting components:
- Fulton soils on rises: 10 percent

Soil Properties and Qualities

Toledo
Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 36 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Clayey glaciolacustrine deposits
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Toledo Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Toledo—none assigned; Urban land—none assigned
Hydric classification: Toledo—hydric; Urban land—not applicable

UcA—Udorthents, loamy, 0 to 2 percent slopes

Setting

Landform: Lake plains
Size of areas: 5 to 350 acres

Map Unit Composition

Udorthents and similar soils: 85 percent

Similar soils:
- Soils that have slopes of 2 to 6 percent
- Soils that have dense till at or near the surface

Contrasting components:
- Buildings, roads, and parking lots: 10 percent
- Areas of undisturbed soil: 5 percent

General Description

- This map unit consists of areas that have been cut and filled. The soil material is loamy.

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: None assigned
Hydric classification: Not applicable

UcE—Udorthents, loamy, 2 to 25 percent slopes

Setting

Landform: Lake plains
Size of areas: 5 to 100 acres

Map Unit Composition

Udorthents and similar soils: 90 percent

Similar soils:
- Soils that have dense till at or near the surface
- Soils that have slopes of 0 to 2 percent

Contrasting components:
- Areas of undisturbed soil: 5 percent
- Roads: 5 percent

General Description

- This map unit consists of areas that have been cut and filled. The soil material is loamy.

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: None assigned
Hydric classification: Not applicable

Ur—Urban land

Setting

Landform: Flats on lake plains
Size of areas: 10 to 600 acres

Map Unit Composition

Urban land: 100 percent

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: None assigned
Hydric classification: Not applicable

WbA—Wabasha silty clay, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 10 to 200 acres

Map Unit Composition

Wabasha and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of silty clay loam
- Soils that have a thick, lighter colored surface layer from overwash
- Soils that have till at a depth of 40 to 60 inches
- Soils that have more sand in the subsoil

Contrasting components:
- Somewhat poorly drained soils on rises: 10 percent

Soil Properties and Qualities

Available water capacity: About 8.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 22 to 39 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Apparent
Ponding duration: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: Frequent
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Clayey alluvium
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay
Surface runoff class: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.

- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- This soil is generally unsuited to use as a site for septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: C-3
Hydric classification: Hydric

WmA—Wauseon loamy fine sand, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 3 to 60 acres

Map Unit Composition

Wauseon and similar soils: 90 percent

Similar soils:
- Soils that have a surface layer of fine sandy loam or loam
- Soils that have more clay in the subsoil
- Soils that have a stratified loamy and silty substratum
- Soils in which the surface layer is less than 10 inches thick
- Soils that have a gravelly substratum
- Soils that have more sand in the subsoil
- Soils that have till at a depth of 48 to 60 inches
- Soils that have till at a depth of 18 to 30 inches

Contrasting components:
- Hoytville soils in landform positions similar to those of the Wauseon soil: 4 percent
- Nappanee soils on rises: 3 percent
- Rimer soils on rises: 3 percent

Soil Properties and Qualities

Available water capacity: About 4.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 7 to 22 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 7 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Surface runoff class: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland

- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

WnA—Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 3 to 200 acres

Map Unit Composition

Wauseon and similar soils: 90 percent

Similar soils:
- Soils in which the surface layer is more than 10 inches thick
- Soils that have a stratified loamy and silty substratum
- Soils that have more clay in the subsoil
- Soils that have till at a depth of 20 to 48 inches

Contrasting components:
- Ottokee soils on rises and knolls: 5 percent
- Tedrow soils on rises: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 27 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 8 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum, rapid in the sandy substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

WyA—Wauseon fine sandy loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 3 to 100 acres

Map Unit Composition

Wauseon and similar soils: 90 percent

Similar soils:
- Soils that have a stratified loamy and silty substratum
- Soils that have till at a depth of 18 to 30 inches
- Soils in which the surface layer is less than 10 inches thick
- Soils that have more clay in the subsoil
- Soils that have a surface layer of loamy fine sand or sandy loam
- Soils that have till at a depth of 48 to 60 inches

Contrasting components:
- Rimer soils on rises: 4 percent
- Aurand soils on rises: 3 percent
- Hoytville soils in landform positions similar to those of the Wauseon soil: 3 percent

Soil Properties and Qualities

Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 27 milliequivalents per 100 grams
Depth class: Very deep

Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 8 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Plants may be affected by moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland
- Plants may be affected by moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland
- A seasonal high water table can inhibit the growth of some species of seedlings by restricting root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3w
Prime farmland classification: Prime farmland where drained
Pasture and hayland suitability group: C-1
Hydric classification: Hydric

WzA—Wauseon-Urban land complex, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on deltas on lake plains
Size of areas: 5 to 75 acres

Map Unit Composition

Wauseon and similar soils: 55 percent
Urban land: 35 percent

Similar soils:
- Soils that have a surface layer of loamy fine sand or sandy loam
- Soils that have more clay in the subsoil
- Soils that have a stratified loamy and silty substratum
- Soils in which the surface layer is less than 10 inches thick
- Soils that have till at a depth of 18 to 30 inches
- Soils that have till at a depth of 48 to 60 inches

Contrasting components:
- Rimer soils on rises: 4 percent
- Aurand soils on rises: 3 percent
- Hoytville soils in landform positions similar to those of the Wauseon soil: 3 percent

Soil Properties and Qualities

Wauseon
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 11 to 27 milliequivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 60 inches
Seasonal high water table: At the surface to 1 foot below the surface
Kind of water table: Perched
Ponding duration: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 8 percent
Parent material: Loamy and sandy glaciolacustrine deposits overlying till
Permeability: Moderately rapid in the solum and slow or very slow in the substratum

Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Surface runoff class: Negligible
Hazard of wind erosion: Moderate

Definition of Urban Land

- Urban land consists of areas that are covered by impervious surfaces, such as pavement and buildings. Onsite investigation is needed to determine the suitability for specific uses.

Use and Management Considerations Affecting the Wauseon Soil

Building site development
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local roads and streets
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: None assigned
Prime farmland classification: Not prime farmland
Pasture and hayland suitability group: Wauseon—none assigned; Urban land—none assigned
Hydric classification: Wauseon—hydric; Urban land—not applicable

Important Farmlands

As defined by the U.S. Department of Agriculture, important farmlands consist of prime farmland, unique farmland, and farmland of statewide and local importance. These farmlands are important because they are the best lands for production of the Nation's crops.

Prime Farmland

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, woodland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 354,330 acres in Wood County, or about 89 percent of the total acreage, meets the soils requirements for prime farmland as defined by the Natural Resources Conservation Service. Wood County consists dominantly of prime farmland soils; however, small areas of soils that do not meet the criteria are scattered throughout the county.

Most of the prime farmland in the county is used as cropland. Urbanization in and around cities and along interstate corridors accounts for the majority of prime farmland lost to urban and industrial uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 5 and in the "Interpretive Groups" table. These lists do not constitute a recommendation for a particular land use. On some soils included in the lists, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps.

The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high-quality crop when treated and managed by acceptable farming methods. Examples of such crops are tree fruits, berries, and vegetables.

Unique farmland has an adequate supply of available moisture for the specific crops for which it is used because of stored moisture, precipitation, or irrigation and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional Farmland of Statewide Importance

Some areas other than areas of prime farmland and unique farmland are of statewide importance in the production of food, feed, fiber, forage, and oilseed crops. The criteria used in defining and delineating these areas are determined by the appropriate state agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some states additional farmland of statewide importance may include tracts of land that have been designated for agriculture by state law.

Additional Farmland of Local Importance

This land consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

Hydric Soils

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 2003) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The map units listed in table 6 meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform. The map units listed in table 7, in general, do not meet the definition of

hydric soils because they do not have one of the hydric soil indicators. Some areas of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Gene Nagel, district conservationist, Natural Resources Conservation Service, assisted in the preparation of this section.

General management needed for crops (row crops and hay) and pasture is suggested in this section. The estimated yields of the main crops and hay and pasture plants are listed for each soil, the crop yield index system for the county is described, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Trends in Land Use

Agriculture is the primary land use in Wood County. In 1982, about 319,500 acres, or 80 percent of the land, was used as cropland; 5,100 acres was used for pasture; 26,400 acres was used as woodland; and 27,400 acres was urban or built-up land (USDA, 1987). In 1997, about 309,000 acres, or 78 percent of the land, was used as cropland; 3,700 acres was used for pasture; 26,100 acres was used as woodland; and 39,900 acres was urban or built-up land (USDA, 1997). In 1978, there were about 1,610 farms in Wood County and the average farm size was 192 acres (Ohio Department of Agriculture, 1979). In 2002, there were about 1,180 farms in Wood County and the average farm size was 270 acres (Ohio Department of Agriculture, 2003). These facts reflect the nationwide trends toward larger farms with fewer operators and the conversion of farmland to urban or nonfarm uses.

Although corn, soybeans, and wheat are the principal crops in the county, the soils and climate are suitable for grain sorghum, sunflowers, oats, barley, rye, and buckwheat. Specialty crops, such as tomatoes, sugar beets, cabbage, and cucumbers, could be grown more extensively in the survey area and are still grown in some areas.

Cropland Management

Prime agricultural land is dispersed throughout the county. With good management practices, most soils are highly productive for crops and pasture. Major soil management concerns are based upon similarities and differences in soil properties and qualities associated with the different types of soil. The major soil management concerns are seasonal wetness (including ponded areas), erosion, soil structure damage (compaction, crusting, clod formation), droughtiness, and soil fertility.

Seasonal wetness and ponding are the major management concerns on about 355,232 acres of land in the county. The very poorly drained Alvada, Colwood, Granby, Hoytville, Latty (till substratum), Mermill, Millgrove, Millsdale, Risingsun, Sloan, Toledo, Wabasha, and Wauseon soils are naturally so wet that crop production is generally not profitable unless surface or subsurface drainage is installed. The poorly drained Joliet and Rollersville soils and the somewhat poorly drained Aurand, Digby, Fulton, Haskins, Kibbie, Nappanee, Randolph, Rimer, Shoals, and Tedrow soils are naturally so wet that

crops are damaged during most years and planting and harvesting is delayed unless artificial drainage is installed.

Small areas of wet soils in seepy areas, along drainageways, and in swales are common inclusions in some areas of the moderately well drained Cygnet, Flatrock, Ottokee, Seward, and Shawtown soils. Random subsurface drainage systems are installed in these areas for maximum crop yields.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface and subsurface drainage is needed in many areas of very poorly drained Alvada, Colwood, Granby, Hoytville, Latty (till substratum), Mermill, Millgrove, Millsdale, Risingsun, Sloan, Toledo, Wabasha, and Wauseon soils used for intensive crop production. Subsurface drains should be more closely spaced in soils that have slow or very slow permeability than in soils that have moderately slow to rapid permeability. Fulton, Hoytville, Latty (till substratum), Nappanee, and Toledo soils are slowly permeable or very slowly permeable throughout.

Establishing adequate outlets for subsurface drainage systems can be difficult in some areas of Alvada, Colwood, Granby, Hoytville, Latty (till substratum), Mermill, Millgrove, Millsdale, Risingsun, Rollersville, Sloan, Toledo, Wabasha, and Wauseon soils. Bedrock may interfere with obtaining the necessary gradients for outlets on subsurface systems in soils that are shallow or moderately deep to bedrock, such as Joliet, Millsdale, and Randolph soils. Existing county and private drainage systems should be maintained as adequate outlets for present and future land uses. These systems commonly become outlets for basement and septic system curtain drains in some areas of Wood County. Urban construction activities can damage and disrupt these existing systems. As a result, renewed wetness and ponding of these previously drained cropland areas now impact homeowners' use of this land. Cooperation between the urban and agricultural communities is needed in order to maintain or improve these drainage systems.

Information about the design of drainage systems for each kind of soil is provided in the Field Office Technical Guide, which is available in the local office of the Natural Resources Conservation Service and the Wood Soil and Water Conservation District.

Erosion by water is a major concern on about 9,551 acres of land in the county. On bare soils, erosion is generally a hazard where the slope is more than 2 percent. The hazard increases as the slope increases.

Erosion reduces natural soil fertility and productivity as the original topsoil is removed and the more acid subsoil is incorporated into the surface layer through tillage. The need for lime and fertilizer to replace lost plant nutrients and maintain productivity is increased. If the amount of annual soil loss exceeds the rate at which new soil is formed, long-term productivity and natural fertility are affected. Loss of the original topsoil is of particular concern in areas of soils that have a high content of clay in the subsoil, such as Fulton, Nappanee, Randolph, and St. Clair soils.

Erosion increases the cost of crop production, results in poor soil structure in the surface layer, increases the need for tillage to incorporate organic material into the surface layer, and reduces the available water capacity of the surface layer. Tillage for preparing a good seedbed requires more energy in eroded spots in many sloping fields. Lower plant populations result from inadequate soil-to-seed contact and a lower available water capacity. These more eroded spots are common in areas of Nappanee and St. Clair soils.

Eroding soil particles with attached nutrients, herbicides, and pesticides enter drainageways, streams, rivers, ponds, lakes, and reservoirs. These sediments can fill drainage ditches and block subsurface drainage outlets (fig. 11). Sediment removal is the most costly item in ditch maintenance. Controlling erosion protects the soil resource base, maintains long-term productivity, reduces drainage maintenance costs, and improves water quality.

Figure 11.—Filter strips create a buffer between cultivated fields and open ditches. These strips help to prevent the sedimentation of surface water caused by surface runoff. Pictured is an area of Hoytville clay loam, 0 to 1 percent slopes.

Wind erosion is a problem on some soils in the survey area. Sandy soils, such as Granby, Ottokee, Spinks, and Tedrow soils, or soils that have a sandy surface layer, such as Dunbridge, Kibbie, Landes, Rimer, Seward, and Wauseon soils, are particularly susceptible to this type of erosion. The Risingsun soils that have an organic surface layer also are susceptible to wind erosion. The abrasive action of windblown sand particles damages crops. Minimizing tillage, avoiding fall plowing, and using cover crops can reduce the hazard of wind erosion. Sod strips and windbreaks can reduce the effects of wind velocity and particle movement.

Management measures that control erosion include crop rotations, cover crops, crop residue management, and conservation tillage. Also, plowing in the spring rather than in the fall helps to control erosion by not leaving the soil surface unprotected over the winter. Management measures that conform to a particular cropping system can be selected to keep soil loss to an amount that will not reduce long-term productivity.

Crop rotations that include cover crops and grasses and legumes reduce the hazard of erosion by providing plant cover for extended periods. These rotations protect bare soil from the erosive forces of raindrop impact and water runoff. Increased water infiltration occurs as soil structure improves in the surface layer. The proportion of hay or pasture in the rotation should increase as the percent of slope increases.

A system of conservation tillage, including no-till planting, that leaves crop residue on the surface can help to control erosion on most of the soils in the county. Such a system is best suited to well drained and moderately well drained soils that become dry and warm early in the spring. Installing surface and subsurface drainage on somewhat poorly drained, poorly drained, and very poorly drained soils is necessary if conservation tillage systems are used. A high level of management, including weed and insect control, also is needed.

Soil structure damage in the surface layer is more commonly referred to as compaction, crusting, or clod formation.

Soil compaction is a general management concern on all of the cropland in the county. Pressure applied to the land surface by farm machinery can cause compaction when the soil is soft and compressible because of wetness. As soil structural units are

mashed and smeared, the pore space occupied by air and water within these structural units and between the structural units is reduced. Also, air and water movement into and out of the soil is restricted. This restriction can result in the ponding of surface water. Such ponding is especially noticeable at the ends of fields, where traffic is increased. Root penetration is restricted to the upper part of the subsoil. Lower crop yields are most noticeable at the ends of fields.

Factors that affect compaction on all soils regardless of use include machinery size, weight, and design (pounds of force per square inch of soil surface area) and the type of farm implements (wheeled versus tracked).

In addition to compaction, soil texture and soil moisture content can affect crusting and clod formation. Crusting, or hardening of the bare soil surface, follows intense rainfall as soon as the surface layer starts to dry. Many of the soils in Wood County have a surface layer of silt loam or silty clay loam. A crust can form in these soils as the granular soil structure is destroyed by tillage. This crust must be broken before some crop seedlings will be able to emerge, especially in areas that are continuously row cropped and in which conventional tillage systems are used.

Clod formation, or hardening of the entire surface layer, follows tillage when the soil moisture content is too high. It is most noticeable in areas of soils that have a surface layer that is high in content of clay. Additional tillage is needed to break up these clods and to facilitate preparation of a good seedbed. Unless adequate rain is received soon after planting, lower plant populations result from inadequate soil-to-seed contact and inadequate available water.

Compaction, crusting, and clod formation can be minimized by tilling the soil at the proper soil moisture content. Less tillage results in less destruction of soil structure. No-till systems initially result in less pore space for air and water movement. After 2 or 3 years, new soil structural units are formed and pore space increases for air and water movement. More roots in the soil contribute to better soil structure. In addition, decreased tillage results in increased macropore (earthworm burrows) and increases the pore space in the soil. This condition is most noticeable in soils with long-term no-tillage management systems, with permanent pasture, or where grass is included in the hay part of the crop rotation.

Droughtiness refers to an insufficient amount of water available for good crop growth between rains. Some soils have a higher available water capacity than others. Droughty soils that are used as cropland or pasture in Wood County are Castalia, Dunbridge, Granby, Hoytville, Joliet, Marblehead, Millsdale, Milton, Nappanee, Ottokee, Randolph, Rimer, Ritchey, Rollersville, Seward, Spinks, St. Clair, Tedrow, and Wauseon soils. Very shallow, shallow, or moderate depth to bedrock, sandy textures in the surface layer and subsoil, erosion, or any combination of these soil properties and qualities results in a low available water capacity.

Many of the soils in which moisture shortages occur are well suited to a system of conservation tillage, such as no-till planting, that leaves crop residue on the surface. The crop residue increases the moisture supply by increasing the rate of water infiltration and by reducing runoff and evaporation rates.

The fertility of a soil depends on the natural fertility level and on past use and management, including previous applications of lime and fertilizer. As a result, fertility can vary widely from field to field, even on the same kind of soil.

About 16 chemical elements are essential to the growth of plants. High crop yields and productive pastures require adequate levels of plant nutrients, lime, and organic matter. Maintaining these levels results in sustained high yields on all of the soils in the county.

Many nutrients are most readily available to plants where the soil is nearly neutral in reaction (pH). They are less readily available where the soil is more acid or more alkaline. Some soils are acid in the upper part of the root zone. In these soils, periodic additions of lime are needed to increase the availability of plant nutrients.

Soil texture, organic matter content, and the type of clay minerals influence the cation-exchange capacity of the soil, which affects the storage and availability of nutrients. The ability to store and release plant nutrients increases as the content of clay and organic matter increases. Hoytville soils have a high content of clay and organic matter and a high capacity to store and release plant nutrients. Soils that have a lower content of clay or organic matter, such as Ottokee and Spinks soils, have a reduced capacity to store and release nutrients and lose more nutrients through leaching. On these soils, frequent applications of a small amount of fertilizer can compensate for the nutrients lost through leaching.

On all soils, additions of lime and fertilizer should be based on the results of soil tests and on crop needs for the expected level of yields. The Ohio State University Extension can help in determining the kinds and amounts of fertilizer and lime to be applied.

Organic matter influences many soil properties, including color, structure, tilth, the rate of water infiltration, available water capacity, and cation-exchange capacity. In Wood County, soils that have a light-colored surface layer generally have a moderate or low content of organic matter in the surface layer. Soils that have a dark surface layer have a high content of organic matter. Cultivation tends to lower the content of organic matter by increasing the rates of oxidation and erosion on sloping soils. Returning all crop residue to the soil helps to maintain the content of organic matter. Cover crops, sod crops, green manure crops, and additions of manure increase the content of organic matter.

Sewage sludge can have economic value as a source of organic matter and some plant nutrients. If the sludge is applied to land, management concerns include the application rate, the hazards associated with heavy metals, possible odor problems, and health hazards. The chemical composition of the sludge should be determined before the sludge is applied. Additions of sludge to cropland should be based on analysis of the sludge, the results of soil tests, and the expected level of crop yields. The Ohio State University Extension can provide information about the application of sewage sludge.

Specialty Crops

The specialty crops grown commercially in Wood County include vegetables, nursery stock, Christmas trees, and fruits. Very few specialty crops in the county are irrigated. Slope, water-holding capacity, intake rates, and rooting depths should be considered in irrigated areas. The slope should not exceed 6 percent. Well drained and moderately well drained soils that have a loamy or sandy surface layer, such as Belmore, Oshtemo, Ottokee, and Spinks soils, respond best to irrigation. Most irrigation water in the county is obtained from wells and ponds.

Specialty crops grown in Wood County include cabbage, tomatoes, sugar beets, popcorn, sweet corn, cucumbers, peppers, and gourds. These crops grow best on very deep, dark soils that have a high content of organic matter. Good drainage on the surface and in the root zone are important for high productivity. Vegetables grow well on soils that warm up early and are not susceptible to compaction. Artificial drainage can be used in the more poorly drained areas. Alvada, Colwood, Granby, Mermill, Millgrove, Risingsun, Rollersville, and Wauseon soils could be farmed intensively for vegetable production.

Orchard and fruit crops grown in the county include apples, peaches, raspberries, and strawberries. Orchard crops grow well on the better drained soils that have a loamy or sandy surface layer, such as Belmore, Haney, Oshtemo, and Shawtown soils. Areas of loamy or sandy soils underlain by bedrock, such as Dunbridge soils, could be planted to orchards. Most produce is marketed locally through roadside farm markets.

The latest information about growing specialty crops can be obtained from local offices of the Natural Resources Conservation Service or the Ohio State University Extension.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 8. The main concerns in managing nonirrigated cropland are controlling flooding, controlling wind erosion and water erosion, preventing ground-water pollution, removing excess water, minimizing surface crusting and compaction, and maintaining soil tilth, fertility, and the content of organic matter.

Generally, a combination of several practices is needed to control *wind erosion* and *water erosion*. Conservation tillage, stripcropping, field windbreaks, tall grass barriers, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Surface drainage, subsurface drainage, or both can be used to remove *excess water*, to lower the *seasonal high water table*, and to help control *ponding.*

A *surface crust* forms in tilled areas after hard rains. This crust may inhibit seedling emergence. Regular additions of crop residue, manure, or other organic materials can improve soil structure and minimize crusting.

Tilling within the proper range in moisture content minimizes *surface compaction*.

Measures that are effective in maintaining *soil tilth, fertility,* and the *content of organic matter* include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *depth to bedrock, flooding, ponding, limited organic matter content,* and *slope.*

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 40 inches.

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers crop residue and leaves a rough or ridged surface helps to prevent the removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Ponding.—Surface drains helps to remove excess surface water and minimize the damage caused by ponding.

Limited organic matter content.—Many soils that have a light-colored surface layer have a low or moderately low content of organic matter and weak or moderate structure. Regularly adding crop residue, manure, and other organic material to the soil maintains or improves the content of organic matter and the soil structure.

Slope.—In areas where the slope is more than 25 percent, water erosion and wind erosion may be accelerated unless conservation farming practices are applied. The selection of crops and the use of equipment are limited. Cultivation may be restricted.

Additional limitations and hazards include the following:

High clay content.—The average content of clay in the subsoil is more than 35 percent. Species that can tolerate droughty conditions should be selected for planting.

Root-restrictive layer.—Root penetration may be severely inhibited because of the physical and chemical characteristics of the soil. Species that have a relatively shallow rooting system should be selected for planting.

Potential for ground-water pollution.—The potential for ground-water pollution is a concern in areas of soils that have excessive permeability, have hard bedrock within the profile, or have a seasonal high water table.

Limited available water capacity, fair tilth, poor tilth, restricted permeability, and *surface crusting.*—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Frost action.—Frost heaving can damage deep-rooted legumes and some small grain crops.

Clodding.—Clods may inhibit germination, reduce the rate of water infiltration, and increase the runoff rate.

Sandy layers.—Deep leaching of nutrients and pesticides may result from sandy layers. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Stony surface.—Stones or boulders on the surface or in the surface layer can hinder normal tillage unless they are removed.

Subsidence of the muck.—Subsidence or shrinkage occurs as a result of oxidation in the muck after the soil is drained. Control of the water table by subirrigation through subsurface drain lines reduces the hazards of subsidence, burning, and wind erosion.

Excessive alkalinity.—High pH in the upper part of the soil may inhibit plant growth and reduce the availability of potassium and micronutrients.

Excessive acidity.—Low pH in the upper part of the soil may increase concentrations of aluminum and manganese and may injure plants.

Gravelly surface.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Following is an explanation of the criteria used to determine the limitations or hazards affecting cropland.

Depth to bedrock.—Bedrock is within a depth of 40 inches.

Easily eroded.—The K factor of the surface layer multiplied by the upper slope limit is more than 2. (Erosion factors are described on page 305.)

Frequent flooding.—The soil is subject to frequent flooding.

Occasional flooding.—The soil is subject to occasional flooding.

Rare flooding.—The soil is subject to rare flooding.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Ponding.—The soil is ponded for at least brief periods.

High potential for ground-water pollution.—Hard bedrock is within a depth of 40 inches, or permeability is more than 6 inches per hour in some layer within a depth of 80 inches and is not 0.2 inch per hour or less in some layer within that depth.

Moderate potential for ground-water pollution.—An apparent water table is within a depth of 40 inches, or permeability is moderately rapid in some layer between depths of 24 and 60 inches and is not 0.2 inch per hour or less in some layer within a depth of 80 inches.

Poor tilth.—The soil is severely eroded, has less than 1 percent organic matter in the surface layer, or has more than 35 percent clay in the surface layer.

Fair tilth.—The soil has a surface layer of silty clay loam.

Excessive acidity.—The upper range of the pH of the soil is less than 4.5 within a depth of 40 inches.

Excessive alkalinity.—The lower range of the pH of the soil is more than 7.9 within a depth of 40 inches.

Restricted permeability.—Permeability is 0.06 inch per hour or less within a depth of 40 inches, and a seasonal high water table is within a depth of 18 inches.

High clay content.—A layer within a depth of 40 inches has a clay content that averages between 40 and 60 percent.

Very high clay content.—A layer within a depth of 40 inches has a clay content that averages more than 60 percent.

Root-restrictive layer.—A fragipan or dense material is within a depth of 40 inches.

Sandy layers.—The family particle size is sandy, sandy or sandy-skeletal, sandy over loamy, sandy over clayey, sandy-skeletal, sandy-skeletal over clayey, or sandy-skeletal over loamy; or the subgroup is Arenic or Psammentic; or the suborder is Psamments.

Seasonal high water table.—The lower limit of the seasonal high water table is less than 1.5 feet.

Slope.—The slope is more than 15 percent.

Wind erosion.—The upper range of the slope is 25 percent or less, and the wind erodibility group is 1, 2, or 3. (Wind erodibility groups are described on page 306.)

Erosion hazard.—The slope is more than 2 percent.

Surface crusting.—The content of organic matter in the surface layer is less than or equal to 3 percent, and the texture is silt loam, loam, or silty clay loam.

Surface compaction.—The soil has a surface layer of silt loam, silty clay loam, or silty clay.

Clodding.—The relative value of the total clay in the surface layer is greater than 32 percent.

Stony surface.—The texture of the surface layer includes a bouldery, very bouldery, extremely bouldery, stony, very stony, extremely stony, cobbly, very cobbly, or extremely cobbly modifier.

Frost action.—The soil has a high potential for frost action.

Part of the surface layer removed by erosion.—The surface layer is moderately eroded.

Most of the surface layer removed by erosion.—The surface layer is severely eroded.

Subsidence of the muck.—The content of organic matter in the surface layer is 20 percent or more.

Crop Yield Index

Table 9 is the crop yield index for Wood County. The yield index reflects the yield potential of a soil in relation to other soils in the county. It is based on the most productive soil (Colwood loam, 0 to 1 percent slopes), which is assigned a rating of 100. The other soils are ranked against this standard.

The yields used to calculate the index values are based on the use of good management practices.

The estimated yields can be calculated by using the yield index number as a percentage and multiplying it by 190 for corn, 60 for soybeans, or 85 for wheat. For example, to calculate the estimated yield of corn for map unit CvA, multiply the index number given for corn, as a percentage (.82), by 190. The result is an estimated 156 bushels of corn.

Advances in equipment technology, plant genetics, drainage, nutrient and pest management, and soil management make standard yield tables obsolete within a period of several years. The crop yield index provides users with the relative productivity of the soils and thus is less affected by these factors.

Current yield data and additional information on calculating estimated yields are available from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). *Capability classes*, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The acreage of soils in each capability class and subclass is shown in table 10. The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and under the heading “Interpretive Groups.”

Pasture and Hayland Management

Some of the acreage in Wood County is used as pasture or as hayland. The more common pasture and hay plants are alfalfa, red clover, alsike clover, bluegrass, orchardgrass, timothy, and bromegrass. Pastures are commonly in areas of soils that have severe limitations affecting row crops. Very shallow, very stony, or stony soils, such as Marblehead, Castalia, Randolph, and Ritchey soils, or soils on the steeper slopes, such as Spinks and St. Clair soils, are commonly used for pasture.

The ability of a pasture to produce forage and to provide enough cover for erosion control is influenced by the number of livestock, the length of the period of grazing, the timeliness of grazing, the forage being grazed, and the availability of water. Good management measures, such as proper stocking rates, pasture rotation, timely deferment of grazing, applications of lime and fertilizer, and control of weeds and insects, help to maintain the key forage plants. Maintaining soil fertility and mowing help to control weeds. The need for lime and fertilizer should be determined by soil tests. The amount of nutrients to be applied should be based on the requirements of the grasses or legumes to be grown.

Erosion control is a management need on gently sloping to very steep soils used for pasture. The hazard of erosion increases as the slope increases. Many of these soils are already eroded. Control of erosion is particularly important when the pasture is seeded. Using a no-till seeding method or growing small grain as a companion crop can help to control further erosion.

Soil compaction is caused by overgrazing or grazing when the soils are wet. It can greatly reduce the vigor of pasture plants. Also, it can increase the runoff rate and the hazard of erosion on sloping soils. Deferment of grazing during wet periods minimizes compaction. Subsurface drains can be effective in removing excess water from pastured areas of soils that are very poorly drained or somewhat poorly drained.

Seeding mixtures should be selected on the basis of soil type and the desired management system. Legumes increase the nutrient value of the forage and provide nitrogen for the growth of grasses. Alfalfa should be seeded on well drained soils that have adequate levels of plant nutrients and lime. The wetter soils are better suited to alsike clover than to red clover or to alfalfa, unless adequate surface and subsurface drainage systems have been installed and well maintained. Information about seeding mixtures, herbicide treatment, and other management measures for specific soils can be obtained from local offices of the Natural Resources Conservation Service or the Ohio State University Extension.

Pasture and Hayland Suitability Groups

The pasture and hayland suitability group for each soil is listed in each map unit description and under the heading “Interpretive Groups.” Soils assigned to the same suitability group require the same general management and have about the same potential productivity. The pasture and hayland suitability groups are organized by soil characteristics and limitations.

Soils assigned to group A have few limitations affecting the management and growth of climatically adapted plants.

Soils in group A-1 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes.

Soils in group A-2 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range

from 18 to 25 percent. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes. The slope may interfere with clipping, mowing, and spraying for weed control. The slope also increases the hazard of erosion if the areas are overgrazed or cultivated for reseeding. The soils in this group are suited to no-till reseeding and interseeding.

Soils in group A-3 are deep or very deep and are well drained or moderately well drained. The available water capacity ranges from moderate to very high. Slopes range from 25 to 40 percent. These soils are not suited to pasture or hay, but some grass pasture is produced.

Soils in group A-4 are deep or very deep and are well drained or moderately well drained. They have stones and boulders on the surface that preclude the use of hay-making equipment. Slopes range from 0 to 40 percent.

Soils in group A-5 are well drained or moderately well drained and are subject to flooding. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Grazing is limited during periods of stream overflow. Floodwater can deposit sediments that lower the quality of forage in areas of these soils.

Soils in group A-6 are deep or very deep, are well drained or moderately well drained, and are subject to frost action. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Frost action can damage legume stands. Mixing fibrous-rooted grasses with the legumes and using proper grazing management methods help to prevent the damage caused by frost action.

Soils in group B have limited growth and production potential because of droughtiness.

Soils in group B-1 are deep or very deep and are well drained or moderately well drained. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The limited available water capacity restricts forage growth and production.

Soils in group B-2 are deep or very deep and are well drained or moderately well drained. The available water capacity is low or very low. Slopes range from 25 to 40 percent. The limited available water capacity restricts forage growth and production.

Soils in group B-3 are well drained to somewhat poorly drained. They are subject to flooding. Slopes range from 0 to 6 percent.

Soils in group B-4 are deep or very deep and are well drained or moderately well drained. They are in areas of reclaimed mines. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The substratum has a high content of rock fragments. The root zone ranges from 20 to 30 inches.

Soils in group C are wet because of a seasonal high water table.

Soils in group C-1 are deep or very deep and are somewhat poorly drained to very poorly drained. Slopes range from 0 to 12 percent. These soils normally respond well to subsurface drainage.

Soils in group C-2 are deep or very deep and are somewhat poorly drained to very poorly drained. They have a seasonal high water table, which restricts the growth of deep-rooted forage plants or species that have a taproot. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of subsurface drainage is typically restricted by the permeability of the subsoil, by a high content of clay in the subsoil, or by a fragipan. Slopes range from 0 to 12 percent.

Soils in group C-3 are somewhat poorly drained to very poorly drained and are subject to flooding. The soils have a seasonal high water table, which restricts the rooting depth of forage plants. Shallow-rooted species grow best on these soils. The available water capacity ranges from moderate to very high. Slopes range from 0 to 6 percent. Grazing is limited during periods of stream overflow.

Soils in group D have a high content of organic matter.

Soils in group D-1 formed entirely or partially in organic material. Slopes range from 0 to 2 percent.

Soils in group E are shallow soils in which root growth is restricted to a depth of less than 20 inches.

Soils in group E-1 are shallow or very shallow. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The limited available water capacity restricts forage production. These soils are well suited to native warm-season grasses.

Soils in group E-2 are shallow or very shallow or have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 25 to 40 percent. Shallow-rooted species should be selected for planting in areas of these soils.

Soils in group E-3 have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 0 to 25 percent.

Soils in group F have a root zone that extends to a depth of 20 to 40 inches. These soils are better suited to forage species that do not have a taproot than to other species.

Soils in group F-1 are moderately deep and are well drained or moderately well drained. Slopes range from 0 to 25 percent.

Soils in group F-2 are moderately deep and are well drained or moderately well drained. Slopes range from 25 to 40 percent. These soils are generally not suited to hay.

Soils in group F-3 are well drained or moderately well drained. They are moderately deep to a fragipan. Slopes range from 0 to 25 percent.

Soils in group F-4 are well drained or moderately well drained. They are moderately deep to a fragipan. Slopes range from 25 to 40 percent.

Soils in group F-5 are well drained or moderately well drained. Rooting depth is restricted in the subsoil by a high bulk density, a high content of clay, slow permeability, or a combination of these factors. Slopes range from 0 to 25 percent.

Soils in group F-6 are well drained or moderately well drained. Rooting depth is restricted in the subsoil by a high bulk density, a high content of clay, slow permeability, or a combination of these factors. Slopes range from 25 to 40 percent.

Soils in group F-7 are somewhat poorly drained to very poorly drained. A high content of clay in the subsoil and very slow permeability restrict the rooting depth of forage plants. Slopes range from 0 to 12 percent.

Soils in group G have chemical properties that are unfavorable for many climatically adapted plants.

Soils in group G-1 are well drained or moderately well drained and are shallow or moderately deep to toxic spoil from surface mining operations. The available water capacity is low or very low in the root zone. Slopes range from 0 to 25 percent.

Soils in group G-2 are well drained or moderately well drained and are shallow or moderately deep to toxic spoil from surface mining operations. Slopes range from 25 to 40 percent.

Soils in group H are toxic or are too steep for forage production.

Soils in group H-1 are toxic as a result of surface mining operations or have slopes of 40 percent or more. These soils are generally not suited to pasture and hay.

The local office of the Natural Resources Conservation Service or the Ohio State University Extension can provide additional information about forage yields in the county.

Woodland Management and Productivity

Greg Maxfield, district forester, Ohio Department of Natural Resources, Division of Forestry, helped prepare this section.

Nearly all of Wood County was forested at the time of the earliest land surveys. The climax forest community was dominantly elm-ash forest, since the entire county lies within the Great Black Swamp Region of Ohio (fig. 12). Scattered remnants of other forest and native plant communities that were associated with better drained soils in the county were beech forest, mixed oak forest, oak savannah, and prairie grassland (Gordon, 1966).

In 1997, about 26,100 acres, or 6.6 percent of the county, was woodland (USDA, 1997). Most of this acreage is in small scattered woodlots on slopes along stream valleys, on flood plains, on bedrock highs, and in isolated tracts on uplands. Most of the woodland has been cut over, and much of it has been grazed.

The return from the sale of wood products is smaller than that from the sale of other farm products on individual farms. If timber is competitively bid out, however, the maximum profit can be realized because of increased demand and changing markets for a variety of native hardwoods. The demand for high-quality oak and walnut continues, but there is also demand for lower quality trees, such as cottonwood, basswood, and soft maple, for pallet material and boxing. The potential for increased production of timber is high. If properly managed, woodlots are capable of producing high-quality, rapidly growing native hardwoods. Well managed woodlots can also provide firewood, lumber, edible nuts, wildlife habitat, esthetic value, and protection from winds.

Most of the woodland in the county is in need of some type of conservation treatment. Livestock grazing in the woodland and inadequate timber management are the major concerns.

Timber stand improvement practices, such as culling diseased trees and less desirable trees and cutting and spraying grapevines, improve the growth rate of favored species. Harvesting mature trees benefits desirable trees by reducing competition and the potential for disease. Species selected for planting on open ground should be matched with the slope and soil type. Planting in established woods is seldom needed or advised. Fencing livestock out of the woods and providing fire protection help to maintain good stands.

Information on forest management is available from the Ohio Department of Natural Resources, Division of Forestry; the Cooperative Extension Service; the Wood Soil and Water Conservation District; and the Natural Resources Conservation Service.

The tables described in this section can help woodland owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of woodland management.

In tables 11a, 11b, and 11c, interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified

Figure 12.—Most of the soils in Wood County support tree species that are tolerant of wetness. These species are associated with the elm-ash forest community that was dominant prior to settlement of the area.

practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Ratings in the column *erosion hazard* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *harvest equipment operability* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for site preparation* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

In table 12, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is provided in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and

calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Windbreaks and Environmental Plantings

Greg Maxfield, district forester, Ohio Department of Natural Resources, Division of Forestry, helped prepare this section.

In Wood County, field windbreaks and environmental plantings are becoming increasingly important. Many soils, such as Granby, Ottokee, Spinks, and Tedrow soils, are subject to erosion. Soils that have a sandy surface layer, such as Dunbridge, Kibbie, Landes, Rimer, Seward, and Wauseon soils, also are susceptible to wind erosion. Southwesterly winds in the spring can leave newly planted seeds uncovered and cause damage to small plants because of blowing sand. Properly designed field windbreaks can also reduce the amount of windblown soil that reaches drainage ditches on the farm, and they provide important habitat for wildlife.

Farm and homestead windbreaks are rows of trees or shrubs established adjacent to farm buildings, feedlots, and homes. These windbreaks are typically planted perpendicular to the prevailing winter wind. Multiple rows of various species provide the best protection from winds and result in more varied wildlife habitat.

Windbreaks protect livestock, buildings, yards, fruit trees, gardens, and cropland from wind and snow; help to keep snow on fields; and provide food and cover for wildlife. Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field (fig. 13). The interval depends on the erodibility of the soil.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 13 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension or from a commercial nursery.

Recreation

The soils of the survey area are rated in tables 14a and 14b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Figure 13.—Windbreaks along the west side of a farmstead in an area of Mermill loam, 0 to 1 percent slopes.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 14a and 14b can be supplemented by other information in this survey, for example, interpretations for construction materials, building site development, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Jeff Burris, wildlife technician, Ohio Department of Natural Resources, Division of Wildlife, helped prepare this section.

The abundance and diversity of wildlife have declined in the intensively farmed counties in northwestern Ohio. As farming has become mechanized and as the acreage of corn and soybeans has increased, there are fewer acres of diversified crops, fence rows, and stream banks lined with woody vegetation. Such areas provide good habitat for wildlife. Fall plowing of cropland destroys the food and cover needed by wildlife to survive the winter. Suitable habitat is the single most important factor determining the existence of a diverse wildlife population. The types of wildlife habitat that occur in Wood County include wetland, grassland, woodland, cropland, and riparian habitat.

Wetland habitat offers shelter for migratory waterfowl, shore birds, songbirds, amphibians, reptiles, and mammals. Wetlands also produce invertebrates and plants that are important foods for game and nongame species. These wetlands also act as pollution filters and floodwater storage basins and provide erosion control.

Grassland habitats generally provide valuable nesting cover. They also furnish food in the form of seed and succulent green plants.

Woodland habitats in the county have been altered by conversion to cropland, overgrazing, residential and industrial development, and commercial timber harvest. Forest lands in the county consist of small woodland "islands" and occur as corridors along streams. These corridors and islands are surrounded by large expanses of cropland.

Cropland habitat is seasonal and is therefore transitory in nature. Cropland provides some food and shelter for wildlife. Moldboard plowing reduces the amount of quality habitat available for resident species. No-till cropping, which leaves crop residue on the soil surface, provides shelter and some food for wildlife during the winter months. Fence rows along field boundaries also provide shelter for wildlife species. Marginal cropland that has been converted to wildlife habitat under provisions of the 1985 Farm Bill has increased the amount of available habitat for game and nongame species.

Stream corridors or riparian habitat consists of the land and corresponding vegetation along the bank of a watercourse. Riparian habitat is one of the richest and most diverse habitat types in Wood County. Riparian buffer zones provide many important benefits. They help to maintain high water quality and improve the habitat for a diverse population of wildlife. The quality of streams and rivers has declined because their natural characteristics have been altered. Tillage and drainage of the land combined with the loss of forested buffer zones have caused watercourses to become wider, shallower, and more turbid.

If they are properly managed, all of the soils in Wood County can provide the habitat elements needed for wildlife. Incorporating openland, wetland, and woodland wildlife habitat principles into current agricultural practices can increase the quantity and quality of wildlife habitat in the county. Additional information about the development of wildlife habitat can be obtained from the local game protector and the local office of the Cooperative Extension Service or the Natural Resources Conservation Service.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 15, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must

be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, rye, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, bromegrass, clover, timothy, orchardgrass, crown vetch, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, indiangrass, fescue, lambsquarters, wheatgrass, and nightshade.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are American plum, redosier dogwood, serviceberry, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, hemlock, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, bulrushes, arrowhead, cattails, waterplantain, wild millet, wildrice, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to

these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for construction materials, building site development, sanitary facilities, agricultural waste management, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “Soil Properties.”

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Construction Materials

Tables 16a and 16b give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 16a, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 17a and 17b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil

properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 18a and 18b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Water Management

Tables 19a and 19b give information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; aquifer-fed excavated ponds; constructing grassed waterways; constructing terraces and diversions; and drainage. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The

limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of wind erosion, a low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding;

slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving (fig. 14). The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 20 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of

Figure 14.—The installation of riprap on ditchbanks improves stabilization and helps to control erosion in this area of Hoytville clay loam, 0 to 1 percent slopes.

nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water,

slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 21 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 15). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

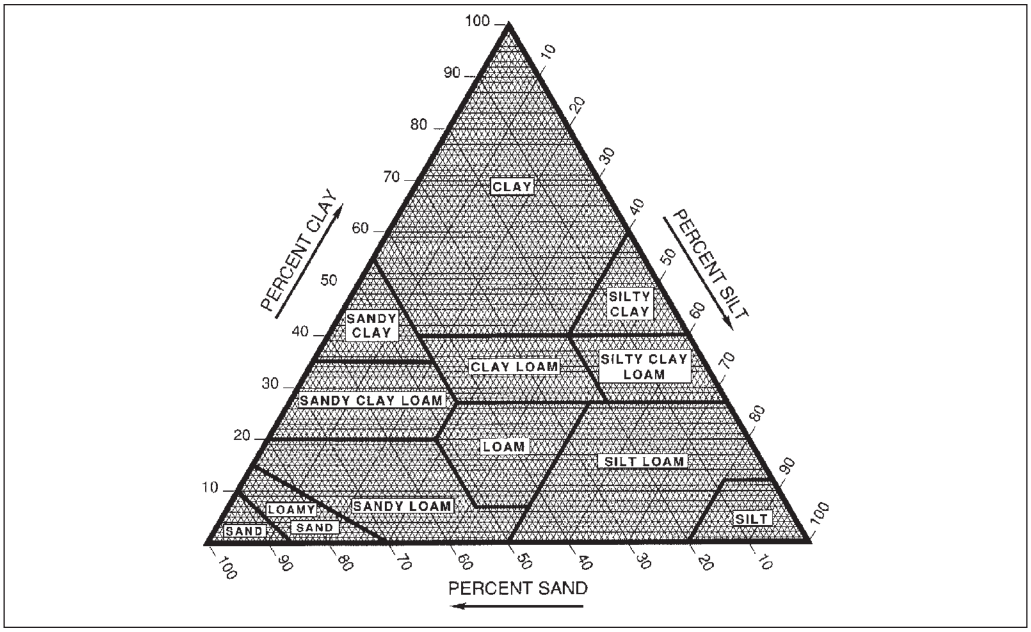

Figure 15.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Properties

Table 22 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil

properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, 6 to 9 percent; and *very high*, greater than 9 percent.

Erosion factors are shown in table 22 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. Descriptions of these groups are available in the “National Soil Survey Handbook” (USDA/NRCS).

Chemical Properties

Table 23 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 23, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Water Features

Table 24 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Water table refers to a saturated zone in the soil. Table 24 indicates the depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone for the specified *months* in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

The table also shows the kind of water table—that is, perched or apparent. An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 24 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* of flooding are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of

flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 25 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense material, and frozen layers. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

Some of the soils in Wood County were sampled by the Soil Characterization Laboratory, School of Natural Resources, Ohio State University, Columbus, Ohio. The physical and chemical data obtained from the samples include particle-size distribution, reaction, organic matter content, calcium carbonate content, and extractable cations. The collected data were used in classifying and correlating the soils and in evaluating their behavior under various land uses. Three pedons were

selected as representative of their respective soil series. These pedons are described in the section “Soil Series and Their Morphology.” The names of the sampled soils and their laboratory identification numbers are: Marblehead (WD-133), Risingsun (WD-134), and Rollersville (WD-135).

Additional lab data are available in the original soil survey (Rapparlie and Urban, 1966). These data were collected during the period from 1954 to 1959. Soils sampled during this period were Colwood (WD-52), Digby (WD-72), Eel (WD-102), Fulton (WD-115), Haney (WD-50), Haskins (WD-111), Hoytville (WD-59), Hoytville (WD-84), Hoytville (shallow to carbonates) (WD-87), Kibbie (WD-112), Mermill (WD-36), Millgrove (WD-49), Milton (WD-56), Nappanee (WD-44), Spinks (WD-110), Toledo (WD-114), Toledo (WD-99), and Wauseon (WD-70). Soil properties that can be referenced from the 1966 survey include horizon, layer depth, particle-size distribution, textural class, bulk density, calcium carbonate equivalent, pH, and organic matter content. Many of the physical properties of the soil remain constant over time, but the chemical properties, such as pH and content of organic matter, can and will change. The modernization survey team maintained these layer depths and properties for many of the minimally revised map units.

In addition to the data from Wood County, laboratory data are available from nearby or adjacent counties that have many of the same soils. These datasets and the data from Wood County are on file at the School of Natural Resources, Ohio State University, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the U.S. Department of Agriculture, Natural Resources Conservation Service, State Office, Columbus, Ohio.

Engineering Index Test Data

Engineering index test data are available for several pedons from Wood County and from several nearby counties that have many of the same soils. These pedons were analyzed for engineering properties by the Ohio Department of Transportation, Division of Highways, Bureau of Testing, Soils Foundation Section. The available test data are on file at the Natural Resources Conservation Service, MLRA Project Office, Findlay, Ohio; Ohio State University, School of Natural Resources, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 26 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in

the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

The selection of the typical pedons is based on the range of characteristics for the series as it occurs throughout a particular Major Land Resource Area (MLRA). The Aurand series, for example, is a common soil series in MLRA 99 (Erie-Huron Lake Plain), which covers most of northwestern Ohio. The typical pedon of the Aurand series is located in Hancock County, Ohio. The soil properties of this pedon are representative of the Aurand soils that occur not only in Wood County but also in other counties that are within MLRA 99.

Pedon descriptions published in this survey come from Wood County or from adjacent counties in MLRA 99 (Erie-Huron Lake Plain). Many of the descriptive terms and attributes have been updated to current standards. In some cases where the descriptive terminology does not have a modern equivalent to make a direct conversion, the attribute or feature was left as described for the original pedon from Wood County.

Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (Soil Survey Staff, 1999) and in “Keys to Soil Taxonomy” (Soil Survey Staff, 1998). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Alvada Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Parent material: Loamy, sandy, and gravelly glaciolacustrine deposits overlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Aurand, Cygnet

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Argiaquolls

Typical Pedon

Alvada loam, 0 to 1 percent slopes, in Hancock County, Ohio; Marion Township; about 4.5 miles east of Findlay; about 200 feet north and 760 feet west of the southeast corner of sec. 14, T. 1 N., R. 11 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; 3 percent rock fragments; neutral; clear smooth boundary.

Btg1—10 to 16 inches; dark gray (10YR 4/1) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; few fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; gradual wavy boundary.

Btg2—16 to 21 inches; gray (10YR 5/1) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and

common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

Btg3—21 to 28 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Bt—28 to 39 inches; brown (10YR 5/3) loam with thin strata of sandy loam; weak medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common medium and coarse faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; slightly effervescent; slightly alkaline; abrupt irregular boundary.

B´tg—39 to 46 inches; grayish brown (10YR 5/2) gravelly loam with thin strata of fine sandy loam and strata of silty clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds and occurring as bridging between sand grains; few medium prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 20 percent rock fragments; strongly effervescent; slightly alkaline; abrupt wavy boundary.

BCg—46 to 50 inches; gray (10YR 5/1) very gravelly sandy loam; weak medium and coarse subangular blocky structure; very friable; few medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 35 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2C—50 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive with widely spaced vertical fractures; firm; few medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 35 to 55 inches
Depth to carbonates: 24 to 55 inches
Depth to till: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—loam
Content of rock fragments—0 to 10 percent

Btg, Bt, or B´tg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 or 2; 3 in the lower part

Texture—clay loam, loam, sandy clay loam, or silty clay loam or the gravelly analogs of these textures
Content of rock fragments—2 to 25 percent

2C or 2Cg horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 6
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

Aurand Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Flats, knolls, and rises on beach ridges and lake plains
Position on the landform: Footslopes, summits, and shoulders
Slope: 0 to 2 percent

Adjacent soils: Mermill, Shawtown

Taxonomic classification: Fine-loamy, mixed, active, mesic Aquic Argiudolls

Typical Pedon

Aurand loam, 0 to 2 percent slopes, in Hancock County, Ohio; Portage Township; about 1.2 miles east of McComb; about 800 feet north and 540 feet east of the southwest corner of sec. 19, T. 2 N., R. 10 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 4/3) clay loam; moderate fine and very fine subangular blocky structure; friable; common fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bt2—17 to 22 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Bt3—22 to 29 inches; yellowish brown (10YR 5/4) loam with thin strata of sandy loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Btg—29 to 33 inches; grayish brown (10YR 5/2) silty clay loam with thin strata of sandy loam and loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly effervescent discontinuously in the matrix; slightly alkaline; abrupt wavy boundary.

2BC—33 to 48 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common distinct light gray (10YR 7/1) calcium carbonate coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2Cd—48 to 62 inches; brown (10YR 4/3) silty clay loam; massive with widely spaced vertical fractures; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cdg—62 to 80 inches; dark gray (10YR 4/1) silty clay loam; massive with widely spaced vertical fractures; very firm; common fine and medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 25 to 50 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—loam or fine sandy loam
Content of rock fragments—0 to 10 percent

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 6
Texture—loam, clay loam, sandy clay loam, or silty clay loam or the gravelly

analogs of these textures; thin subhorizons of sandy loam, fine sandy loam, loamy sand, or loamy fine sand or the gravelly analogs of these textures in some pedons

Content of rock fragments—0 to 20 percent

2BC, 2BCg, 2Cd, or 2Cdg horizon:

Hue—10YR, 2.5Y, or N
Value—4 or 5
Chroma—0 to 4
Texture—clay loam, silty clay loam, or clay
Content of rock fragments—1 to 7 percent

Belmore Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately rapid in the solum and rapid in the substratum
Parent material: Loamy and gravelly beach deposits
Landform: Rises and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 1 to 4 percent

Adjacent soils: Digby, Haney, Millgrove

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs
Taxadjunct features: The Belmore soils in Wood County have redoximorphic features within a depth of 40 inches. These features are generally indicators of a seasonal high water table. These soils are classified as fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs.

Typical Pedon

Belmore loam, 2 to 6 percent slopes, in Sandusky County, Ohio; York Township; about 3 miles northwest of Bellevue; about 248 feet north and 760 feet east of the southwest corner of sec. 16, T. 4 N., R. 17 E.

Ap—0 to 7 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; common roots; 2 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt1—7 to 12 inches; brown (7.5YR 5/4) clay loam; moderate medium and coarse subangular blocky structure; friable; few roots; few faint brown (7.5YR 5/4) clay bridges between sand grains; 4 percent rock fragments; moderately acid; clear smooth boundary.

Bt2—12 to 17 inches; brown (7.5YR 4/4) gravelly clay loam; moderate coarse and medium subangular blocky structure; friable; few roots; common distinct dark reddish brown (5YR 3/4) clay bridges between sand grains; 20 percent rock fragments; slightly acid; clear smooth boundary.

Bt3—17 to 23 inches; brown (7.5YR 4/4) gravelly clay loam; weak fine subangular blocky structure; friable; few roots; common distinct dark reddish brown (5YR 3/4) clay bridges between sand grains; 15 percent rock fragments; slightly acid; clear smooth boundary.

Bt4—23 to 30 inches; brown (7.5YR 4/4) gravelly sandy clay loam; weak fine subangular blocky structure; friable; common distinct dark reddish brown (5YR 3/4) clay bridges between sand grains; 30 percent rock fragments; neutral; abrupt smooth boundary.

C1—30 to 47 inches; mixed grayish brown (10YR 5/2) and pale brown (10YR 6/3) gravelly loamy sand; single grain; loose; few fine distinct yellowish brown (10YR

5/6) masses of iron accumulation in the matrix; 30 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—47 to 56 inches; mixed grayish brown (10YR 5/2) and pale brown (10YR 6/3) sand; single grain; loose; few fine distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C3—56 to 60 inches; brown (10YR 4/3) sandy loam; massive; friable; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 22 to more than 60 inches
Depth to carbonates: 22 to more than 60 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—5YR to 10YR
Value—3 to 5
Chroma—2 or 3
Texture—sandy loam or loam
Content of rock fragments—2 to 10 percent

Bt horizon:
Hue—5YR to 10YR
Value—3 to 5
Chroma—2 to 6
Texture—clay loam, sandy clay loam, loam, fine sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments—5 to 34 percent

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—loamy sand, sand, coarse sandy loam, sandy loam, or loam or the gravelly or very gravelly analogs of these textures
Content of rock fragments—3 to 40 percent

Castalia Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Rapid
Parent material: Loamy and sandy beach or eolian deposits mixed with glacially displaced limestone or dolostone fragments of local origin
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Dunbridge, Marblehead, Ritchey

Taxonomic classification: Loamy-skeletal, carbonatic, mesic Inceptic Haprendolls

Typical Pedon

Castalia extremely channery loam, 0 to 2 percent slopes, in Erie County, Ohio; Groton Township; about 8 miles southwest of Sandusky; about 300 feet south and 500 feet

east of the intersection of Portland Road and State Route 99; quadrangle 2; T. 5 N., R. 24 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) extremely channery loam, dark grayish brown (10YR 4/2) dry; strong fine granular structure; friable; many fine roots; 60 percent limestone channers 1 to 5 inches in diameter and 1/2 to 1 inch thick; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bw—8 to 16 inches; brown (7.5YR 4/4) extremely channery loam; weak fine granular structure; friable; many fine roots; 80 percent limestone channers 1 to 5 inches in diameter and 1/2 to 1 inch thick; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—16 to 24 inches; 90 percent limestone channers and flagstones and 10 percent brown (10YR 4/3) loam; massive; friable; common fine and medium roots; 90 percent limestone channers and flagstones 3 to 10 inches in length and 1/2 inch to 2 inches thick; fragments are displaced slightly from original bedding; strongly effervescent; moderately alkaline; gradual irregular boundary.

R—24 inches; gray (10YR 5/1) limestone with vertical fractures 1 to 2 feet apart.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 9 inches
Thickness of the solum: 10 to 25 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2, 2.5, or 3
Chroma—1 or 2
Texture—very cobbly loam or very stony fine sandy loam
Content of rock fragments—35 to 59 percent

Bw horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 6
Texture—the very channery, extremely channery, very cobbly, extremely cobbly, very stony, extremely stony, very flaggy, or extremely flaggy analogs of loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments—35 to 80 percent

C horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 6
Texture—the very channery, extremely channery, very cobbly, extremely cobbly, very stony, extremely stony, very flaggy, or extremely flaggy analogs of loam, fine sandy loam, sandy loam, or silt loam
Content of rock fragments—50 to 90 percent

Colwood Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Parent material: Stratified silty and loamy glaciolacustrine deposits

Landform: Flats, depressions, and drainageways on deltas and lake plains
Slope: 0 to 1 percent

Adjacent soils: Kibbie

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Endoaquolls
Taxadjunct features: The Colwood soils in Wood County have an epipedon that meets all of the requirements for a mollic epipedon except for thickness. These soils are classified as fine-loamy, mixed, active, mesic Mollic Endoaquepts.

Typical Pedon

Colwood loam, 0 to 2 percent slopes, in Defiance County, Ohio; Mark Township; about 4.5 miles east-northeast of Hicksville; about 1,452 feet south and 370 feet east of the northwest corner of sec. 7, T. 4 N., R. 2 E.

Ap—0 to 8 inches; very dark brown (10YR 2/2) loam, grayish brown (10YR 5/2) dry; weak coarse subangular blocky structure parting to moderate medium granular; friable; many fine roots; neutral; abrupt smooth boundary.

A—8 to 12 inches; very dark brown (10YR 2/2) loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many fine roots; very few fine rounded pebbles; neutral; abrupt smooth boundary.

Bg1—12 to 17 inches; gray (5Y 5/1) loam; weak fine and very fine subangular blocky structure; friable; common fine roots; common fine and medium pores; dark gray (10YR 4/1) coatings on faces of peds; common fine and medium prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; very few fine pebbles; neutral; clear wavy boundary.

Bg2—17 to 24 inches; gray (5Y 6/1) loam; moderate medium and fine angular blocky structure; friable; common fine roots; common very fine and fine pores; olive gray (5Y 5/2) coatings on faces of peds; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent black (5YR 2/1) iron and manganese oxide concretions; very few fine rounded pebbles; neutral; gradual wavy boundary.

Bg3—24 to 34 inches; gray (5Y 6/1) loam; moderate coarse and medium angular blocky structure; friable; few fine roots; common fine and very fine pores; gray (5Y 5/1) coatings on faces of peds; many medium and coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent black (5YR 2/1) iron and manganese oxide concretions; very few fine rounded pebbles; neutral; clear wavy boundary.

Cg1—34 to 50 inches; gray (5Y 6/1), stratified silty clay loam, silt loam, and fine sandy loam; weak medium angular blocky structure; friable; few fine roots; common very fine pores; gray (5Y 5/1) coatings on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; gradual wavy boundary.

Cg2—50 to 60 inches; gray (5Y 5/1) and olive gray (5Y 5/2), stratified sandy loam and silt loam; massive with distinct bedding planes; friable; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 9 inches
Thickness of the solum: 24 to 55 inches
Depth to carbonates: 30 to 45 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR

Value—2 or 3
Chroma—1 or 2
Texture—loam or fine sandy loam

Bg horizon:
Hue—7.5YR to 5Y, 5GY, or N
Value—4 to 6
Chroma—0 to 2
Texture—loam, silt loam, sandy clay loam, clay loam, silty clay loam, sandy loam, fine sandy loam, or very fine sandy loam

Cg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture—stratified silt loam, very fine sand, fine sand, sandy loam, silty clay loam, or fine sandy loam with thin strata of clay, silty clay, clay loam, loam, very fine sandy loam, or loamy sand

Cygnet Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summits and shoulders
Slope: 0 to 2 percent

Adjacent soils: Aurand, Haskins, Shawtown

Taxonomic classification: Fine-loamy, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Cygnet loam, 0 to 2 percent slopes, in Allen County, Ohio; Sugar Creek Township; about 1.5 miles west-northwest of Gomer; about 2,620 feet east and 1,020 feet north of the southwest corner of sec. 19, T. 2 S., R. 6 E.

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine and medium subangular blocky structure; friable; common fine and very fine roots; 5 percent rock fragments; slightly acid; clear smooth boundary.
Ap2—4 to 12 inches; dark grayish brown (10YR 4/2) loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; friable; common fine and very fine roots; 5 percent intermixing of yellowish brown (10YR 5/4) material from the Bt1 horizon; common faint dark brown (10YR 3/3) organic coatings on faces of peds; few fine and medium prominent strong brown (7.5YR 5/8) spherical masses of iron accumulation in the matrix; 4 percent rock fragments; strongly acid; abrupt wavy boundary.
Bt1—12 to 19 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common faint brown (10YR 5/3) clay depletions on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct

black (10YR 2/1) spherical masses of manganese accumulation in the matrix; 4 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—19 to 27 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and few faint dark yellowish brown (10YR 4/4) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; 3 percent rock fragments; strongly acid; clear smooth boundary.

Bt3—27 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; common fine and very fine roots; few faint brown (10YR 5/3) and many distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/8) and distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; common medium distinct black (10YR 2/1) spherical masses of manganese accumulation in the matrix; 3 percent rock fragments; moderately acid; gradual wavy boundary.

Bt4—36 to 41 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) and prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt5—41 to 45 inches; brown (10YR 4/3) sandy clay loam; moderate fine and medium subangular blocky structure; very friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct dark brown (10YR 3/3) clay bridges between sand grains; common fine distinct yellowish brown (10YR 5/6) and prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; clear wavy boundary.

Bt6—45 to 50 inches; yellowish brown (10YR 5/4) sandy clay loam with pockets of dark brown (10YR 3/3) loam; moderate medium and coarse subangular blocky structure; friable; few fine and very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds and dark grayish brown (10YR 4/2) clay films in root channels and pores; many distinct very dark grayish brown (10YR 3/2) clay bridges in the pockets of loam; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in the matrix; 1 percent rock fragments; neutral; abrupt smooth boundary.

2BC—50 to 56 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common distinct light brownish gray (10YR 6/2) carbonate coatings on vertical faces of peds; common distinct yellowish brown (10YR 5/6) hypocoats along vertical faces of peds; 2 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cd1—56 to 68 inches; brown (10YR 5/3) silty clay; massive with widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1) carbonate coatings on fractures; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd2—68 to 80 inches; brown (10YR 5/3) silty clay loam; massive; very firm; 2 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 33 to 60 inches
Depth to carbonates: 33 to 60 inches
Depth to till: 40 to 60 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—loam
Content of rock fragments—0 to 14 percent

Bt horizon:
Hue—7.5YR to 2.5Y
Value—3 to 5
Chroma—3 to 6; 2 in the lower part
Texture—clay loam, loam, or sandy clay loam or the gravelly analogs of these textures; sandy loam included in the range in the lower part
Content of rock fragments—0 to 30 percent

2BC horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 7 percent

2Cd or 2Cdg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 7 percent

Digby Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum and rapid in the substratum; till substratum phase—moderate in the solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Parent material: Loamy and gravelly beach or glaciolacustrine deposits; till substratum phase—loamy glaciolacustrine deposits overlying till
Landform: Flats, rises, and knolls on beach ridges and lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Belmore, Haney, Haskins, Millgrove

Taxonomic classification: Fine-loamy, mixed, active, mesic Aeric Endoaqualfs
Taxadjunct features: The Digby soils (till substratum phase) in map units HeA, HeB, HfA, and HfB have a perched water table and episaturation. They are classified as fine-loamy, mixed, active, mesic Aeric Epiaqualfs.

Typical Pedon

Digby loam, 0 to 3 percent slopes, in Defiance County, Ohio; Hicksville Township; about 1 mile west-northwest of Hicksville; about 840 feet south and 220 feet west of the center of sec. 17, T. 4 N., R. 1 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; common fine and very fine pores; neutral; abrupt smooth boundary.

Bt1—9 to 15 inches; yellowish brown (10YR 5/4) clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; thin discontinuous grayish brown (10YR 5/2) clay films on faces of peds; grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 12 percent rock fragments; moderately acid; clear wavy boundary.

Bt2—15 to 20 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; few fine pores; medium continuous dark grayish brown (10YR 4/2) clay films on faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; many fine distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) masses of iron and manganese oxide accumulation in the matrix; 13 percent rock fragments; slightly acid; clear wavy boundary.

Btg1—20 to 26 inches; grayish brown (10YR 5/2) gravelly clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine pores; medium continuous dark grayish brown (10YR 4/2) clay films on faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; many medium prominent brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; 15 percent rock fragments; neutral; gradual wavy boundary.

Btg2—26 to 35 inches; light brownish gray (2.5Y 6/2) gravelly loam; weak medium and fine subangular blocky structure; firm; few fine roots; few fine pores; thin discontinuous dark grayish brown (10YR 4/2) clay films on vertical faces of peds; grayish brown (10YR 5/2) coatings on faces of peds; many fine distinct yellowish brown (10YR 5/4) and prominent (10YR 5/6) masses of iron accumulation in the matrix; 23 percent rock fragments; strongly effervescent in places; slightly alkaline; gradual wavy boundary.

C1—35 to 44 inches; brown (10YR 5/3) very gravelly sandy loam; single grain; very friable; 35 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

C2—44 to 60 inches; grayish brown (10YR 5/2) and yellowish brown (10YR 5/4), stratified very gravelly sandy loam and very gravelly loamy sand; single grain; very friable; 40 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 28 to 48 inches
Depth to carbonates: 30 to more than 48 inches
Depth to till: More than 48 inches and commonly more than 60 inches; 18 to 42 inches in the till substratum phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 3

Texture—sandy loam, fine sandy loam, or loam
Content of rock fragments—0 to 14 percent

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—sandy clay loam, sandy loam, clay loam, or loam in the upper part; clay loam, sandy clay loam, fine sandy loam, or loam or the gravelly analogs of these textures in the lower part
Content of rock fragments—2 to 14 percent in the upper part; 10 to 34 percent in the lower part

C or Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—loamy sand, sandy loam, loamy coarse sand, coarse sandy loam, or sand or the gravelly or very gravelly analogs of these textures; thin layers of silt loam or loam in some pedons
Content of rock fragments—5 to 40 percent

2C or 2Cg horizon (if it occurs):
Hue—10YR, 2.5Y, 5Y, or N
Value—4 or 5
Chroma—0 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Dunbridge Series

Depth class: Shallow to deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Parent material: Sandy and loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Marblehead, Randolph, Ritchey

Taxonomic classification: Fine-loamy, mixed, active, mesic Mollic Hapludalfs

Typical Pedon

Dunbridge sandy loam, 1 to 4 percent slopes, in Sandusky County, Ohio; Madison Township; about 1.25 miles south of Gibsonburg; about 1,240 feet east and 1,240 feet south of the northwest corner of sec. 25, T. 5 N., R. 13 E.

Ap1—0 to 5 inches; dark brown (10YR 3/3) sandy loam, grayish brown (10YR 5/2) dry; weak medium and fine granular structure; friable; many roots; 5 percent gravel; neutral; abrupt smooth boundary.
Ap2—5 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; weak medium and coarse granular structure; friable; many roots; 5 percent gravel; neutral; abrupt smooth boundary.

Bt1—9 to 13 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak coarse and medium subangular blocky structure; friable; few fine roots; few very dark grayish brown (10YR 3/2) wormcasts in the matrix; common distinct brown (10YR 4/3) clay films on faces of peds; 3 percent gravel; neutral; clear wavy boundary.
Bt2—13 to 20 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common distinct brown (10YR 4/3) clay bridging between sand grains; 1 percent gravel; neutral; clear smooth boundary.
Bt3—20 to 25 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak coarse and medium subangular blocky structure; friable; few roots; common distinct dark yellowish brown (10YR 4/4) clay bridging between sand grains; 4 percent gravel; slightly effervescent; slightly alkaline; abrupt smooth boundary.
Bt4—25 to 30 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; 2 percent gray (10YR 6/1) and yellowish brown (10YR 5/4) weathered limestone gravel; slightly effervescent; slightly alkaline; abrupt smooth boundary.
2R—30 inches; fractured limestone.

Range in Characteristics

Thickness of the solum: 18 to 42 inches
Depth to bedrock: 18 to 42 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2 to 4
Chroma—1 to 3
Texture—sandy loam or loamy fine sand
Content of rock fragments—1 to 14 percent

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 6
Texture—fine sandy loam, sandy loam, sandy clay loam, loam, or clay loam or the gravelly analogs of these textures
Content of rock fragments—1 to 34 percent

Eel Series

Depth class: Very deep; moderately deep or deep in the bedrock substratum phase
Drainage class: Moderately well drained
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium; loamy alluvium overlying limestone or dolostone in the bedrock substratum phase
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Genesee, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluvaquentic Eutrudepts

Typical Pedon

Eel loam, occasionally flooded, in Lucas County, Ohio; Monclova Township; about 1 mile southeast of Albon Lake; about 600 feet north and 900 feet east of the center of sec. 33, T. 2 N.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; common fine roots; neutral; abrupt smooth boundary.
Bw1—9 to 16 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few fine roots; neutral; abrupt wavy boundary.
Bw2—16 to 22 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; few fine roots; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine faint brown (10YR 4/3) masses of iron accumulation in the matrix; neutral; gradual wavy boundary.
BC—22 to 33 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.
C—33 to 60 inches; brown (10YR 4/3) sandy loam with strata of loamy sand; massive; friable; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Depth to bedrock: More than 48 inches but typically more than 60 inches; 20 to 42 inches in the bedrock substratum phase

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bw or Bg horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 6
Texture—loam, silt loam, or clay loam
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Hue—10YR
Value—4 to 6
Chroma—1 to 4
Texture—sandy loam, fine sandy loam, or loam; strata of loamy sand, sandy loam, silt loam, silty clay loam, clay loam, loamy fine sand, fine sand, or sand
Content of rock fragments—0 to 14 percent

Flatrock Series

Depth class: Very deep
Drainage class: Moderately well drained

Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon

Flatrock silt loam, frequently flooded, in Paulding County, Ohio; Paulding Township; about 1.7 miles southwest of the village of Paulding; about 1,450 feet east and 1,450 feet north of the southwest corner of sec. 14, T. 2 N., R. 2 E.

Ap—0 to 13 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; common faint dark grayish brown (10YR 4/2) organic coatings on faces of peds and in worm channels; neutral; clear smooth boundary.

Bw1—13 to 18 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; many brown (10YR 4/3) wormcasts; few faint brown (10YR 5/3) coatings on vertical faces of peds; few fine faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few fine distinct very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; slightly acid; gradual wavy boundary.

Bw2—18 to 30 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct brown (10YR 5/3) and light brownish gray (10YR 6/2) coatings on vertical faces of peds; few fine distinct grayish brown (10YR 5/2) and common fine faint brown (10YR 5/3) iron depletions in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in the matrix; neutral; gradual wavy boundary.

Bw3—30 to 44 inches; dark yellowish brown (10YR 4/4) loam; weak and moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings on vertical faces of peds; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; many medium distinct black (10YR 2/1) masses of manganese accumulation on faces of peds; neutral; gradual wavy boundary.

C—44 to 80 inches; yellowish brown (10YR 5/4) loam with thin strata of silt loam and fine sandy loam; massive; friable; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct black (10YR 2/1) masses of manganese accumulation in the matrix; neutral.

Range in Characteristics

Thickness of the solum: 24 to 55 inches
Depth to carbonates: 40 to more than 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3

Texture—silt loam
Content of rock fragments—0 to 5 percent

Bw or Bg horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, silty clay loam, or loam; thin subhorizons of clay loam or fine sandy loam in some pedons
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—loam, silt loam, silty clay loam, clay loam, sandy loam, coarse sandy loam, or fine sandy loam; commonly stratified
Content of rock fragments—0 to 14 percent

Fulton Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and in the lacustrine substratum and slow or very slow in the till substratum
Parent material: Clayey glaciolacustrine deposits overlying till
Landform: Flats, rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Latty (till substratum), Toledo

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Fulton silty clay loam, till substratum, 0 to 2 percent slopes, in Wood County, Ohio; Northwood Corporation Congress Lands; about 7 miles east of Rossford; about 580 feet west and 1,795 feet north of the southeast corner of sec. 36, T. 8 N., R. 12 E.

Ap—0 to 9 inches; brown (10YR 4/3) silty clay loam, very pale brown (10YR 7/3) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; firm; common fine and very fine roots; moderately acid; clear smooth boundary.

Bt1—9 to 15 inches; brown (10YR 5/3) silty clay; weak medium subangular blocky structure; firm; common fine and medium roots along faces of peds; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; many medium and coarse faint grayish brown (10YR 5/2) and common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; strongly acid; gradual wavy boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/4) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine and very fine roots along prisms; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few

medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; moderately acid; gradual wavy boundary.

Bt3—22 to 32 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine and very fine roots along prisms; many distinct dark gray (10YR 4/1) clay films on faces of peds; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few distinct black (10YR 2/1) manganese coatings on faces of peds; neutral; gradual wavy boundary.

Bt4—32 to 35 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine and very fine roots throughout; common distinct gray (10YR 5/1) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; gradual wavy boundary.

BC—35 to 47 inches; yellowish brown (10YR 5/4) silty clay loam with strata of silt loam; weak medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; strongly effervescent; slightly alkaline; gradual wavy boundary.

C—47 to 68 inches; brown (10YR 5/3) silty clay loam with strata of silt loam; massive parting to weak medium platy structure; firm in the silty clay loam and friable in the silt loam; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cd—68 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive with widely spaced vertical partings; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 22 to 40 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 3
Texture—silty clay loam

Bt or Btg horizon:
Hue—10YR to 5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay or clay; silty clay loam included in the range in the lower part

BC or BCg horizon:
Hue—10YR to 5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay loam with strata of silt loam

C or Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—silty clay loam with strata of silt loam

Cdg or 2Cd horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—clay loam, silty clay loam, or clay
Content of rock fragments—1 to 7 percent

Genesee Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Eel, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts

Typical Pedon

Genesee silt loam, frequently flooded, in Ottawa County, Ohio; Harris Township; about 3 miles south-southeast of Rocky Ridge; about 90 feet east and 1,480 feet north of the southwest corner of sec. 10, T. 6 N., R. 14 E.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium and fine granular structure; friable; many roots; dark brown (10YR 3/3) coatings on faces of peds; slightly acid; abrupt smooth boundary.

Bw1—7 to 13 inches; brown (10YR 4/3) silt loam; weak medium and fine subangular blocky structure; friable; many roots; organic stains on faces of peds; very dark grayish brown (10YR 3/2) fillings in worm channels; neutral; clear smooth boundary.

Bw2—13 to 19 inches; brown (10YR 4/3) silt loam; weak medium and fine subangular blocky structure; friable; many roots; very dark grayish brown (10YR 3/2) coatings on faces of peds; dark brown (10YR 3/3) fillings in worm channels; neutral; clear smooth boundary.

Bw3—19 to 32 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; many roots; dark brown (10YR 3/3) fillings in worm channels; neutral; clear smooth boundary.

C1—32 to 47 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; common roots; common prominent white (10YR 8/2) snail shells; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—47 to 60 inches; dark yellowish brown (10YR 4/4) loam; massive; firm; few roots; few fine faint brown (10YR 4/3) and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many prominent white (10YR 8/2) snail shells; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 42 inches
Depth to carbonates: 20 to 42 inches
Depth to bedrock: More than 48 inches; typically more than 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

C horizon:
Hue—10YR
Value—3 to 6
Chroma—2 to 4
Texture—silt loam, loam, or sandy loam
Content of rock fragments—0 to 14 percent

Granby Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Rapid in the sandy solum and substratum and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits overlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Ottokee, Spinks, Tedrow

Taxonomic classification: Sandy, mixed, mesic Typic Endoaquolls

Typical Pedon

Granby loamy fine sand, till substratum, 0 to 1 percent slopes, in Wood County, Ohio; Center Township; about 2.5 miles east of Bowling Green; about 2,100 feet south and 475 feet west of the northeast corner of sec. 27, T. 5 N., R. 11 E.

Ap—0 to 11 inches; very dark gray (10YR 3/1) loamy fine sand, gray (10YR 5/1) dry; weak fine granular structure; very friable; many fine roots throughout; 2 percent fine gravel; neutral; abrupt smooth boundary.

Bg1—11 to 19 inches; gray (10YR 5/1) loamy fine sand; weak medium subangular blocky structure; very friable; common fine roots throughout; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; many medium and coarse faint grayish brown (10YR 5/2) iron depletions in the

matrix; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 2 percent fine gravel; neutral; gradual wavy boundary.

Bg2—19 to 33 inches; grayish brown (10YR 5/2) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots throughout; common medium and coarse faint gray (10YR 5/1) iron depletions in the matrix; common coarse distinct yellowish brown (10YR 5/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 2 percent fine gravel; neutral; gradual wavy boundary.

Cg—33 to 45 inches; grayish brown (10YR 5/2) loamy fine sand; single grain; loose; common medium faint gray (10YR 6/1) iron depletions in the matrix; common medium distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 2 percent fine gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C—45 to 58 inches; brown (10YR 5/3) fine sand; single grain; loose; many medium and coarse distinct gray (10YR 6/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 2 percent fine gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C´g1—58 to 65 inches; grayish brown (10YR 5/2) fine sand with strata of loamy fine sand; single grain; loose; many coarse faint gray (10YR 6/1) iron depletions in the matrix; common coarse distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; strongly effervescent; slightly alkaline; clear wavy boundary.

C´g2—65 to 74 inches; gray (10YR 5/1), stratified loamy sand and sand; single grain; loose; 5 percent fine gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cdg—74 to 80 inches; gray (10YR 5/1) clay loam; massive; very firm; common fine faint gray (10YR 6/1) calcium carbonate accumulations along vertical fractures; about 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 20 to 52 inches
Depth to carbonates: 20 to more than 60 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR to 5Y or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—loamy fine sand
Content of rock fragments—0 to 5 percent

Bg or Bw horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 3
Texture—loamy fine sand, sand, loamy sand, or fine sand
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Hue—10YR to 5Y
Value—4 to 7
Chroma—1 to 4
Texture—sand, coarse sand, fine sand, loamy fine sand, or loamy sand
Content of rock fragments—0 to 5 percent

2Cd or 2Cdg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—clay loam, silty clay loam, silty clay, or clay
Content of rock fragments—1 to 7 percent

Haney Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the solum and rapid in the substratum
Parent material: Loamy and gravelly beach or glaciolacustrine deposits
Landform: Flats, rises, and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Belmore, Digby, Millgrove

Taxonomic classification: Fine-loamy, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Haney loam, 2 to 6 percent slopes, in Putnam County, Ohio; Sugar Creek Township; about 2 miles northeast of Vaughnsville; SE1/4SE1/4 sec. 1, T. 2 S., R. 6 E.

Ap—0 to 9 inches; brown (10YR 4/3) loam; moderate medium granular structure; very friable; 5 percent gravel; slightly acid; abrupt smooth boundary.

Bt1—9 to 17 inches; yellowish brown (10YR 5/4) clay loam; weak and moderate fine and medium subangular blocky structure; friable; thin discontinuous brown (10YR 4/3) clay films on vertical faces of peds; few medium faint brown (10YR 5/3) and dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 5 percent gravel; moderately acid; clear wavy boundary.

Bt2—17 to 26 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; thin discontinuous brown (10YR 5/3) clay films on faces of peds; few fine distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine faint brown (10YR 4/3) masses of iron accumulation in the matrix; 10 percent gravel; moderately acid; diffuse wavy boundary.

Bt3—26 to 34 inches; dark yellowish brown (10YR 4/4) sandy clay loam; weak and moderate fine and medium subangular blocky structure; firm; thin discontinuous grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; 10 percent gravel; slightly acid; clear wavy boundary.

BCt—34 to 42 inches; brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm; thin discontinuous gray (10YR 5/1) clay films on vertical faces of peds; common medium prominent dark gray (N 4/0) iron depletions in the matrix; 10 percent gravel; slightly effervescent; slightly alkaline; diffuse wavy boundary.

Cg—42 to 60 inches; gray (10YR 5/1) gravelly loam; massive; loose; many medium distinct dark yellowish brown (10YR 4/4) and prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 20 percent gravel; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 27 to 36 inches

Depth to carbonates: 27 to 36 inches
Depth to till: More than 48 inches and commonly more than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—2 to 5
Chroma—2 or 3
Texture—loam or sandy loam
Content of rock fragments—2 to 14 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6; 2 in the lower part
Texture—clay loam, sandy clay loam, silty clay loam, or loam or the gravelly analogs of these textures
Content of rock fragments—2 to 34 percent

C or Cg horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—1 to 4
Texture—sandy loam or loamy sand or the gravelly or very gravelly analogs of these textures; sand, gravelly sand, or very gravelly sand occur as strata
Content of rock fragments—10 to 40 percent

Haskins Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Aurand, Digby, Mermill

Taxonomic classification: Fine-loamy, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon

Haskins loam, 0 to 2 percent slopes, in Hancock County, Ohio; Pleasant Township; about 1 mile west-northwest of McComb; about 1,040 feet north and 1,840 feet west of the southeast corner of sec. 22, T. 2 N., R. 9 E.

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; friable; common fine roots; 5 percent intermixing of grayish brown (10YR 5/2) material from the BEg horizon; 2 percent rock fragments; moderately acid; abrupt smooth boundary.

BEg—9 to 13 inches; grayish brown (10YR 5/2) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint light brownish gray (10YR 6/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) wormcasts and organic coatings in pores; few medium prominent strong brown (7.5YR 5/6) and many medium faint brown (10YR 5/3) masses of iron accumulation in the matrix; common distinct brown (7.5YR 4/4) masses of iron and

manganese oxide accumulation on faces of peds; 2 percent rock fragments; moderately acid; clear wavy boundary.

Btg—13 to 18 inches; grayish brown (10YR 5/2) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) wormcasts and organic coatings in pores; many medium prominent yellowish brown (10YR 5/6) and few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few distinct dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt1—18 to 24 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) and common coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few distinct dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2—24 to 30 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common prominent dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium prominent dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) and few medium faint strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few prominent dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 3 percent rock fragments; neutral; clear smooth boundary.

B´tg—30 to 36 inches; dark grayish brown (10YR 4/2) loam with strata of yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds and bridges between sand grains in the loam material; common medium prominent yellowish brown (10YR 5/6) and distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few faint dark brown (7.5YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 5 percent rock fragments in the loam material and 1 percent rock fragments in the fine sandy loam strata; neutral; abrupt smooth boundary.

2BC—36 to 52 inches; yellowish brown (10YR 5/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual irregular boundary.

2Cd—52 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive with widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; few fine distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 25 to 55 inches
Depth to carbonates: 18 to 42 inches

Depth to till: 18 to 42 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 3
Texture—loam or fine sandy loam
Content of rock fragments—0 to 10 percent

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture—dominantly clay loam or sandy clay loam; the range includes loam and sandy loam or the gravelly analogs of these textures
Content of rock fragments—0 to 20 percent

2Bt, 2Btg, 2BCtg, 2BC, or 2BCg horizon:
Hue—10YR to 5Y or N
Value—4 or 5
Chroma—0 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

2C or 2Cg horizon:
Hue—10YR to 5Y or N
Value—4 or 5
Chroma—0 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Hoytville Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Nappanee, St. Clair

Taxonomic classification: Fine, illitic, mesic Mollic Epiaqualfs
Taxadjunct features: The Hoytville soil in map unit HwA does not have the translocated clay required for an argillic horizon. This soil is classified as a fine, illitic, mesic Mollic Epiaquept.

Typical Pedon

Hoytville clay loam, 0 to 1 percent slopes, in Wood County, Ohio (fig. 16); Henry Township; about 1.5 miles east-northeast of Hoytville; in the Ohio Agricultural Research and Development Center, Northwestern Branch; about 2,000 feet east and 1,000 feet north of the southwest corner of sec. 18, T. 3 N., R. 10 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) clay loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; firm; common fine roots

Figure 16.—Profile of a Hoytville soil. Organic matter results in a dark surface layer, and the reduction of iron is responsible for the gray colors in the upper part of the subsoil. The spade is 36 inches long.

throughout; common fine distinct brown (7.5YR 4/4) masses of iron accumulation in the matrix; 2 percent rock fragments (subangular limestone and shale); slightly acid; clear smooth boundary.

Btg1—9 to 18 inches; dark gray (2.5Y 4/1) clay; moderate fine and medium subangular blocky structure; very firm; few fine roots between peds; few distinct gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subrounded igneous rock and subangular limestone and shale); neutral; clear wavy boundary.

Btg2—18 to 27 inches; grayish brown (10YR 5/2) clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots between peds; common faint gray (10YR 5/1) clay films on faces of peds; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subangular limestone and shale); neutral; clear wavy boundary.

Btg3—27 to 42 inches; grayish brown (10YR 5/2) clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots between peds; common faint gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct black (10YR 2/1) manganese threads in the matrix; 2 percent rock fragments (subrounded igneous rock and subangular limestone and shale); slightly effervescent discontinuously at a depth of 37 inches; strongly effervescent at a depth of 40 inches; slightly alkaline; gradual wavy boundary.

Bt—42 to 52 inches; yellowish brown (10YR 5/4) clay; weak coarse angular blocky structure; firm; few fine roots between peds; common distinct gray (10YR 5/1) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 3 percent rock fragments (subrounded igneous rock and subangular limestone and shale); strongly effervescent; slightly alkaline; clear wavy boundary.

BC—52 to 60 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to weak coarse angular blocky; firm; few fine roots between peds; common distinct gray (10YR 5/1) coatings on vertical faces of prisms; few distinct light gray (10YR 7/1) carbonate coatings on vertical faces of prisms; few continuous prominent yellowish brown (10YR 5/6) hypocoats beneath the carbonate coatings; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; common medium distinct light gray (10YR 7/1) carbonate masses on vertical faces of prisms; 5 percent rock fragments (subrounded igneous rock and subangular limestone and shale); strongly effervescent; moderately alkaline; clear wavy boundary.

Cd1—60 to 72 inches; dark yellowish brown (10YR 4/4) clay loam; massive with widely spaced vertical fractures; very firm; few distinct light gray (10YR 7/1) carbonate coatings on faces of fractures; few discontinuous prominent yellowish brown (10YR 5/4) hypocoats beneath the carbonate coatings; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese threads on faces of fractures; common fine distinct light gray (10YR 7/1) carbonate masses on faces of fractures; 5 percent rock fragments (subrounded igneous rock and subangular limestone and shale); strongly effervescent; moderately alkaline; clear wavy boundary.

Cd2—72 to 84 inches; brown (10YR 4/3) clay loam; massive; very firm; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct black (10YR 2/1) manganese threads in the matrix; 5 percent rock fragments (subrounded igneous rock and subangular limestone and shale); strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 65 inches; 30 to 55 inches in the shallow to carbonates phase

Depth to carbonates: 30 to 55 inches; shallow to carbonates phase—typically 10 to 20 inches but ranges from 0 to 24 inches

Depth to dense material: 50 to 70 inches; shallow to carbonates phase—more than 48 inches but typically more than 60 inches

Depth to bedrock: More than 80 inches; shallow to carbonates phase—more than 48 inches but typically more than 60 inches

Ap horizon:
Hue—10YR or 2.5Y
Value—2, 2.5, or 3
Chroma—1 or 2
Texture—silty clay, clay, silty clay loam, or clay loam
Content of rock fragments—0 to 5 percent

Btg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture—clay or silty clay
Content of rock fragments—1 to 10 percent

Bt horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—clay loam, clay, silty clay loam, or silty clay
Content of rock fragments—1 to 10 percent

Cd or Cdg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 6
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—2 to 10 percent

Joliet Series

Depth class: Shallow
Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Flats, depressions, and drainageways on reefs on lake plains
Slope: 0 to 1 percent

Adjacent soils: Castalia, Dunbridge, Marblehead, Millsdale, Randolph

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Endoaquolls
Taxadjunct features: The surface layer of the Joliet soils in Wood County does not meet the thickness requirement for a mollic epipedon. These soils are classified as loamy, mixed, superactive, mesic Lithic Endoaquepts.

Typical Pedon

Joliet silty clay loam, 0 to 1 percent slopes, in Wood County, Ohio; Bloom Township; about 1 mile east of Cygnet; NE1/4NW1/4 sec. 8, T. 3 N., R. 11 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium granular structure; very firm; neutral; abrupt wavy boundary.
Bg—6 to 16 inches; grayish brown (2.5Y 5/2) and very dark grayish brown (10YR 3/2) silty clay loam; strong fine angular blocky structure; firm; common prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; neutral; abrupt wavy boundary.
2R—16 to 18 inches; limestone.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—0 to 14 percent

Bg horizon:
Hue—10YR to 5Y or N
Value—3 to 5
Chroma—0 to 2
Texture—clay loam, silty clay, clay, or silty clay loam
Content of rock fragments—0 to 14 percent

Kibbie Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately rapid in the upper part of the solum and moderate in the lower part of the solum and in the substratum
Parent material: Stratified loamy and silty glaciolacustrine deposits
Landform: Rises and knolls on deltas on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Colwood

Taxonomic classification: Fine-loamy, mixed, active, mesic Aquollic Hapludalfs
Taxadjunct features: The surface layer of the Kibbie soils in Wood County has moist value of 4 and does not meet the color requirement for a mollic subgroup. These soils are classified as fine-loamy, mixed, active, mesic Aeric Endoaqualfs.

Typical Pedon

Kibbie fine sandy loam, 0 to 2 percent slopes, in Ottawa County, Ohio; Harris Township; about 0.75 mile north of Elmore; about 300 feet east and 1,550 feet south of the northwest corner of sec. 18, T. 6 N., R. 14 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) fine sandy loam, grayish brown (10YR 5/2) dry; weak medium and fine granular structure; very friable; many roots; neutral; clear wavy boundary.

BA—9 to 17 inches; dark grayish brown (2.5Y 4/2) loam; weak medium and fine subangular blocky structure; friable; many roots; very dark gray (10YR 3/1) organic coatings on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; abrupt wavy boundary.

Bt1—17 to 25 inches; yellowish brown (10YR 5/4), stratified loam and silty clay loam; weak medium and fine subangular blocky structure; friable; many roots; thin discontinuous dark grayish brown (10YR 4/2) clay films on vertical faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; very dark grayish brown (10YR 3/2) organic coatings on faces of peds; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bt2—25 to 37 inches; yellowish brown (10YR 5/4), stratified loam and silty clay loam; weak coarse prismatic structure parting to weak medium and fine subangular blocky; very friable; many roots; thin discontinuous dark grayish brown (10YR 4/2) clay films on vertical faces of peds; dark grayish brown (10YR 4/2) coatings on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common distinct very dark gray (10YR 3/1) accumulations of iron and manganese oxide on faces of peds; neutral; diffuse smooth boundary.

C—37 to 46 inches; brown (10YR 5/3) silt loam with thin strata of loamy fine sand; weak thick platy structure; friable; few coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; clear smooth boundary.

Cg—46 to 60 inches; grayish brown (10YR 5/2), stratified silt loam and silty clay loam; weak thick platy structure; friable; few coarse prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—4
Chroma—1 to 3
Texture—fine sandy loam or loamy fine sand
Content of rock fragments—less than 1 percent

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—loam, clay loam, sandy clay loam, fine sandy loam, silty clay loam, or silt loam
Content of rock fragments—less than 1 percent

C or Cg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 4
Texture—dominantly silt loam to fine sand with strata ranging from clay to loamy sand or fine sand
Content of rock fragments—less than 1 percent

Landes Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum and rapid in the substratum
Parent material: Loamy and sandy alluvium
Landform: Rises and natural levees on flood plains
Slope: 0 to 6 percent

Adjacent soils: Rossburg, Shoals, Sloan

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon

Landes loam, occasionally flooded, in Paulding County, Ohio; Crane Township; about 3.4 miles west of Cecil; about 600 feet east and 160 feet south of the northwest corner of sec. 17, T. 3 N., R. 2 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; common fine and medium roots; few medium prominent white (10YR 8/1) aquatic shells in the matrix; very slightly effervescent; moderately alkaline; clear smooth boundary.

A—10 to 18 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to weak fine and medium granular; friable; few fine roots; common faint very dark gray (10YR 3/1) organic coatings on faces of peds; few medium prominent white (10YR 8/1) aquatic shells in the matrix; very slightly effervescent; moderately alkaline; clear wavy boundary.

Bw—18 to 26 inches; brown (10YR 4/3) loam; weak fine and medium subangular blocky structure; friable; few fine roots; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few very dark grayish brown (10YR 3/2) wormcasts; common medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; gradual smooth boundary.

C1—26 to 46 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; very friable; few fine roots; few dark grayish brown (10YR 4/2) wormcasts; common medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2—46 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; friable; few medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the solum: 22 to 40 inches
Carbonates: At the surface to a depth of more than 80 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—loamy fine sand
Content of rock fragments—0 to 10 percent

Bw horizon:
Hue—10YR
Value—3 to 6
Chroma—3 or 4
Texture—loam, very fine sandy loam, fine sandy loam, loamy fine sand, sandy loam, or loamy very fine sand
Content of rock fragments—0 to 10 percent

C horizon:
Hue—2.5YR to 10YR
Value—4 to 6

Chroma—1 to 4
Texture—sand, fine sand, very fine sand, loamy sand, loamy fine sand, loamy very fine sand, sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam
Content of rock fragments—0 to 10 percent

Latty Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow in the solum, very slow in the lacustrine substratum, and slow or very slow in the till substratum
Parent material: Clayey glaciolacustrine deposits overlying till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Fulton, Toledo

Taxonomic classification: Fine, illitic, nonacid, mesic Typic Endoaquepts

Typical Pedon

Latty silty clay, in Lucas County, Ohio; Jerusalem Township; about 0.25 mile west of Bono; about 2,250 feet south and 200 feet west of the northeast corner of sec. 7, T. 10 S., R. 10 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silty clay, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure; firm; many fine roots; slightly acid; abrupt smooth boundary.

Bg1—10 to 18 inches; gray (5Y 5/1) silty clay; moderate fine angular blocky structure; firm; few fine roots; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds; common medium prominent yellowish brown (10YR 5/4) and brown (7.5YR 4/4) masses of iron accumulation in the matrix; few fine prominent very dark gray (10YR 3/1) iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bg2—18 to 27 inches; gray (5Y 5/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few fine roots; common medium prominent yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Bg3—27 to 33 inches; gray (5Y 5/1) silty clay; weak medium prismatic structure parting to moderate medium angular blocky; firm; few fine roots; common medium prominent yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine prominent very dark brown (10YR 2/2) iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

BCg—33 to 46 inches; gray (5Y 5/1) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; dark yellowish brown (10YR 4/4) on ped interiors; common medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few fine prominent very dark brown (10YR 2/2) iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

Cg—46 to 65 inches; gray (5Y 5/1) silty clay; massive; firm; many medium prominent yellowish brown (10YR 5/4) and common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common prominent light gray (10YR 7/1) calcium carbonate concretions in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 32 to 60 inches
Depth to carbonates: 32 to 48 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR or 2.5Y
Value—4
Chroma—1 or 2
Texture—silty clay

Bg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture—clay or silty clay

Cg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture—clay, silty clay loam, or silty clay

2Cdg or 2Cd horizon (if it occurs):
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 8
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 7 percent

Marblehead Series

Depth class: Very shallow
Drainage class: Somewhat excessively drained
Permeability: Moderate
Parent material: Loamy glaciolacustrine deposits overlying limestone or dolostone
Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Dunbridge, Millsdale, Milton, Randolph

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Hapludolls

Typical Pedon

Marblehead loam, 0 to 6 percent slopes, in Erie County, Ohio; Margaretta Township; about 2 miles east of Castalia; from the intersection of State Routes 101 and 412 with Bradshar Road, about 1,500 feet southwest along State Routes 101 and 412, then 300 feet north; T. 6 N., R. 24 W.

A1—0 to 6 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; moderate medium and fine granular structure; friable; common fine and very fine roots; 2 percent rock fragments; slightly acid; clear wavy boundary.

A2—6 to 8 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak medium and fine granular structure; friable; few very fine roots; 20 percent rock fragments; slightly acid; abrupt smooth boundary.
2R—8 inches; limestone with widely spaced vertical fractures typically at intervals of 30 to 40 feet.

Range in Characteristics

Thickness of the mollic epipedon: 4 to 10 inches
Thickness of the solum: 4 to 10 inches
Depth to bedrock: 4 to 10 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2, 2.5, or 3
Chroma—1 or 2
Texture—gravelly silt loam
Content of rock fragments—15 to 20 percent

Mermill Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Aurand, Haskins

Taxonomic classification: Fine-loamy, mixed, active, mesic Mollic Epiaqualfs

Typical Pedon

Mermill loam, 0 to 1 percent slopes, in Hancock County, Ohio; Portage Township; about 1.75 miles northeast of McComb; about 1,520 feet north and 2,180 feet east of the southwest corner of sec. 18, T. 2 N., R. 10 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; common fine roots; 1 percent rock fragments; moderately acid; clear wavy boundary.
Btg1—9 to 14 inches; gray (10YR 5/1) clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.
Btg2—14 to 21 inches; grayish brown (2.5Y 5/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2)

moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg3—21 to 28 inches; grayish brown (2.5Y 5/2) sandy clay loam with thin strata of fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent yellowish brown (10YR 5/6) and common medium and coarse faint brown (10YR 5/3) masses of iron accumulation in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear smooth boundary.

2Btg4—28 to 36 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; many medium and coarse distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few medium faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC—36 to 57 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots in the upper part; common distinct gray (10YR 5/1) coatings on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2C—57 to 80 inches; brown (10YR 4/3) clay loam; massive with widely spaced vertical fractures; firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 60 inches
Depth to carbonates: 24 to 50 inches
Depth to till: 20 to 40 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam, fine sandy loam, or sandy clay loam
Content of rock fragments—0 to 10 percent

Btg horizon:
Hue—10YR to 5Y or N
Value—4 to 6
Chroma—0 to 2
Texture—loam, sandy clay loam, or clay loam
Content of rock fragments—0 to 10 percent

2Bt, 2Btg, 2BC, or 2BCg horizon:
Hue—10YR to 5Y or N

Value—4 to 6
Chroma—0 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

2C or 2Cg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 6
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Millgrove Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum and moderately rapid in the lower part of the solum and in the substratum
Parent material: Loamy and gravelly glaciolacustrine deposits
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Belmore, Digby, Haney

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
Taxadjunct features: The Millgrove soils in Wood County have an epipedon that meets all of the requirements for a mollic epipedon except for thickness. These soils are classified as fine-loamy, mixed, superactive, mesic Mollic Endoaqualfs.

Typical Pedon

Millgrove loam, in Henry County, Ohio; Napoleon Township; about 1 mile south of Napoleon; SW$^1/_4$SE$^1/_4$SE$^1/_4$SE$^1/_4$ sec. 24, T. 5 N., R. 6 E.

Ap—0 to 9 inches; very dark brown (10YR 2/2) loam; moderate medium granular structure; very friable; many roots; slightly acid; clear smooth boundary.
A—9 to 12 inches; very dark grayish brown (10YR 3/2) loam; weak medium subangular blocky structure parting to moderate medium granular; very friable; many roots; slightly acid; gradual smooth boundary.
Btg1—12 to 17 inches; gray (5Y 5/1) sandy clay loam; weak medium subangular blocky structure; friable; common roots; thin very discontinuous very dark brown (10YR 2/2) clay films on faces of peds; many fine distinct gray (10YR 6/1) iron depletions in the matrix; many fine prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.
Btg2—17 to 27 inches; gray (5Y 5/1) clay loam; moderate medium angular blocky structure; friable; common roots; medium discontinuous very dark gray (10YR 3/1) and black (10YR 2/1) clay films on faces of peds; many fine prominent very dark gray (10YR 3/1) iron depletions in the matrix; many fine prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.
Btg3—27 to 38 inches; gray (5Y 5/1) clay loam; moderate medium prismatic structure parting to moderate coarse subangular blocky; very firm; few roots; medium continuous dark gray (10YR 4/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6 and 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Btg4—38 to 42 inches; gray (5Y 6/1) sandy clay loam; weak coarse subangular blocky structure; firm; few roots; thin discontinuous light olive brown (2.5Y 5/4) clay films on vertical faces of peds; many medium prominent yellowish brown (10YR 5/6 and 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; clear wavy boundary.

2Cg1—42 to 48 inches; light brownish gray (2.5Y 6/2) sand; single grain; loose; few coarse prominent brownish yellow (10YR 6/6) and yellowish brown (10YR 6/8) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; gradual smooth boundary.

2Cg2—48 to 72 inches; gray (10YR 6/1) sand with thin strata ($^1/_4$ to $^1/_2$ inch thick) of clay at depths of 48, 55, and 72 inches; single grain; loose; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the dark epipedon: 7 to 9 inches; commonly 8 or 9 inches
Thickness of the solum: 20 to 48 inches
Depth to carbonates: 20 to 48 inches
Depth to till: More than 60 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam
Content of rock fragments—0 to 14 percent

Btg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture—loam, sandy clay loam, or clay loam or the gravelly analogs of these textures; sandy loam or its gravelly or very gravelly analogs in the lower part of some pedons
Content of rock fragments—0 to 15 percent in the upper part and 5 to 40 percent in the lower part

2C or 2Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—sandy loam, coarse sandy loam, loamy sand, or loam or the gravelly or very gravelly analogs of these textures; commonly stratified
Content of rock fragments—0 to 40 percent

Millsdale Series

Depth class: Moderately deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Milton, Randolph

Taxonomic classification: Fine, mixed, active, mesic Typic Argiaquolls
Taxadjunct features: The Millsdale soils in Wood County have an epipedon that meets all of the requirements for a mollic epipedon except for thickness. These soils are classified as fine, mixed, active, mesic Mollic Endoaqualfs.

Typical Pedon

Millsdale silty clay loam, in Sandusky County, Ohio; Washington Township; about 2 miles southeast of Hessville; about 500 feet west and 500 feet south of the northeast corner of sec. 22, T. 5 N., R. 14 E.

Ap—0 to 10 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak medium and fine granular structure; firm; many fine roots; 1 percent rock fragments; slightly acid; clear smooth boundary.
AB—10 to 13 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; firm; many fine roots; few coarse faint brown (10YR 5/3) and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common faint black (10YR 2/1) krotovinas; 1 percent rock fragments; neutral; abrupt smooth boundary.
Btg1—13 to 18 inches; dark gray (10YR 4/1) silty clay; strong coarse subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) clay films on vertical faces of peds; common coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent rock fragments; neutral; clear smooth boundary.
Btg2—18 to 24 inches; grayish brown (10YR 5/2) silty clay; strong coarse and medium subangular blocky structure; firm; common fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6), many medium faint brown (10YR 5/3), and few medium prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; 3 percent rock fragments; slightly effervescent; slightly alkaline; abrupt smooth boundary.
2R—24 to 26 inches; fractured dolostone.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—1 to 14 percent

Btg or Bt horizon:
Hue—10YR to 5Y or N
Value—3 to 6
Chroma—0 to 2; 0 to 4 in the lower part
Texture—clay loam, silty clay loam, silty clay, or clay
Content of rock fragments—1 to 14 percent

Milton Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately slow
Parent material: Till overlying dolostone or limestone

Landform: Rises and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Dunbridge, Millsdale, Randolph, Ritchey

Taxonomic classification: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Milton silt loam, 2 to 6 percent slopes, in Ottawa County, Ohio; Danbury Township; about 2 miles southwest of Marblehead; about 550 feet east along Bay Shore Drive from the intersection of Bay Shore and Hartshorn Roads, then 120 feet north.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate medium and fine granular; friable; many roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

Bt1—6 to 13 inches; brown (7.5YR 4/4) silty clay; strong medium subangular blocky structure; very firm; common roots; brown (7.5YR 5/4) coatings and medium continuous clay films on faces of peds; 3 percent rock fragments; slightly acid; clear smooth boundary.

Bt2—13 to 22 inches; brown (7.5YR 4/4) silty clay; weak medium subangular blocky structure; very firm; common roots; yellowish brown (10YR 5/6) coatings and thin discontinuous clay films on faces of peds; 5 percent rock fragments; slightly acid; clear smooth boundary.

Bt3—22 to 28 inches; brown (7.5YR 4/4) silty clay; weak medium subangular blocky structure; firm; common roots; thin discontinuous yellowish brown (10YR 5/4) clay films on faces of peds; 5 percent rock fragments; slightly alkaline; abrupt smooth boundary.

Bt4—28 to 36 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; firm; few roots; thin discontinuous yellowish brown (10YR 5/4) clay films on faces of peds; common distinct pinkish gray (7.5YR 7/2) calcium carbonate coatings on faces of peds; 10 percent rock fragments; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2R—36 to 38 inches; hard limestone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 or 3
Texture—loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—5YR to 10YR
Value—3 to 6
Chroma—3 to 6
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 12 percent

Nappanee Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Flats, rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Haskins, Hoytville, St. Clair

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Nappanee silty clay loam, 0 to 2 percent slopes, in Hancock County, Ohio; Pleasant Township; about 2 miles northwest of Deweyville; about 240 feet north and 1,460 feet west of the southeast corner of sec. 6, T. 2 N., R. 9 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silty clay loam, pale brown (10YR 6/3) dry; weak medium and coarse subangular blocky structure parting to moderate medium granular; firm; few medium and common fine roots; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation lining the interior of pores; 10 percent intermixing of brown (10YR 5/3) material from the Bt horizon; 1 percent rock fragments; strongly acid; clear smooth boundary.

Bt—8 to 15 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 1 percent rock fragments; strongly acid; gradual wavy boundary.

Btg1—15 to 24 inches; grayish brown (10YR 5/2) silty clay; strong fine and medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg2—24 to 32 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; slightly effervescent discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

B´t—32 to 40 inches; yellowish brown (10YR 5/4) clay; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; few fine and very fine roots in the upper part; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—40 to 56 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; very firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd—56 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive with widely spaced vertical fractures; very firm; few fine and medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation oriented along fractures; few distinct very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation oriented along faces of fractures; few medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to more than 60 inches
Depth to carbonates: 18 to 40 inches
Depth to bedrock: More than 48 inches; typically more than 60 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 3
Texture—silty clay loam, sandy loam, or loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or clay; thin subhorizons of silty clay loam in some pedons
Content of rock fragments—1 to 10 percent

C, Cg, Cd, or Cdg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—2 to 10 percent

Oshtemo Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum, very rapid in the gravelly substratum, and slow or very slow in the till substratum
Parent material: Stratified loamy and sandy beach deposits overlying till
Landform: Knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 2 to 6 percent

Adjacent soils: Aurand, Shawtown

Taxonomic classification: Coarse-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Oshtemo sandy loam, till substratum, 2 to 6 percent slopes, in Hancock County, Ohio; Liberty Township; about 4 miles west of Findlay; about 666 feet north and 1,720 feet west of the southeast corner of sec. 20, T. 1 N., R. 10 E.

Ap—0 to 11 inches; dark brown (10YR 3/3) sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; few coarse and common medium and fine roots; 2 percent rounded gravel; moderately acid; clear smooth boundary.

Bt1—11 to 19 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots between peds; few faint dark yellowish brown (10YR 4/4) clay bridges between sand grains; 2 percent rounded gravel; moderately acid; gradual wavy boundary.

Bt2—19 to 26 inches; brown (10YR 4/3) sandy loam; moderate fine and medium subangular blocky structure; friable; few fine and medium roots between peds; few faint brown (10YR 4/3) clay films on faces of peds; common faint brown (10YR 4/3) clay bridges between sand grains; 2 percent rounded gravel; slightly acid; gradual wavy boundary.

Bt3—26 to 34 inches; dark yellowish brown (10YR 3/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots between peds; common faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 5 percent rounded gravel; neutral; gradual wavy boundary.

Bt4—34 to 44 inches; dark brown (10YR 3/3) gravelly sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots between peds; common faint dark brown (10YR 3/3) clay bridges between sand grains; 16 percent rounded gravel; neutral; clear irregular boundary.

C1—44 to 50 inches; brown (10YR 4/3) loamy sand; single grain; loose; common medium and coarse faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; 8 percent rounded gravel; strongly effervescent; slightly alkaline; gradual wavy boundary.

C2—50 to 75 inches; brown (10YR 5/3), stratified loamy coarse sand and gravelly loamy coarse sand; single grain; loose; common medium and coarse faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; 7 percent rounded gravel in the loamy coarse sand and 17 percent rounded gravel in the gravelly loamy coarse sand; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2Cd—75 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; common medium and coarse distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 3 percent subrounded gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 75 inches
Depth to carbonates: 40 to 70 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 or 3
Texture—sandy loam
Content of rock fragments—1 to 14 percent

Bt horizon:
Hue—5YR to 10YR
Value—3 to 5
Chroma—3 to 6
Texture—fine sandy loam, sandy loam, sandy clay loam, gravelly coarse sandy loam, gravelly sandy loam, or gravelly sandy clay loam
Content of rock fragments—1 to 30 percent

C horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 6
Texture—coarse sand, loamy coarse sand, sand, or loamy sand or the gravelly analogs of these textures; commonly stratified
Content of rock fragments—5 to 30 percent

2Cd or 2Cdg horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 4
Texture—silty clay loam, clay loam, clay, or silty clay
Content of rock fragments—1 to 7 percent

Ottokee Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid; till substratum phase—rapid in the sandy glaciolacustrine material and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine or eolian deposits; till substratum phase—sandy glaciolacustrine deposits overlying till
Landform: Rises and knolls on beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Granby, Spinks, Tedrow

Taxonomic classification: Mixed, mesic Aquic Udipsamments

Typical Pedon

Ottokee fine sand, 0 to 6 percent slopes, in Fulton County, Ohio; York Township; about 5 miles south of Delta; about 2,500 feet south and 1,720 feet east of the northwest corner of sec. 12, T. 6 N., R. 7 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sand, dark grayish brown (10YR 4/2) rubbed, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; slightly acid; abrupt smooth boundary.
E1—8 to 22 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; slightly acid; clear wavy boundary.
E2—22 to 27 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; many fine prominent yellowish red (5YR 5/8 and 4/6) and common fine faint pale brown (10YR 6/3) masses of iron accumulation in the matrix; many dark iron and manganese oxide concretions in the matrix; slightly acid; gradual wavy boundary.
E3—27 to 33 inches; pale brown (10YR 6/3) fine sand; single grain; loose; few fine distinct gray (10YR 6/1) iron depletions in the matrix; few to many fine and medium

prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

E4—33 to 39 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few to many fine and medium prominent yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) masses of iron accumulation in the matrix; neutral; abrupt irregular boundary with tongues extending into the horizon below.

E and Bt—39 to 60 inches; light brownish gray (10YR 6/2) loamy fine sand in the upper part and pale brown (10YR 6/3) loamy fine sand in the lower part (E); single grain; loose; discontinuous lamellae of strong brown (7.5YR 5/8) loamy fine sand $^1/_8$ to $^3/_4$ inch thick increasing in thickness with depth (Bt); weak fine subangular blocky structure; massive in places; very friable; neutral; clear wavy boundary.

Cg—60 to 78 inches; gray (10YR 5/1) fine sand; single grain; loose; many medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 90 inches
Depth to lamellae: 28 to 50 inches
Depth to carbonates: 40 to 90 inches
Depth to till: More than 60 inches; 36 to 48 inches in the till substratum phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—loamy fine sand
Content of rock fragments—0 to 6 percent

E horizon:
Hue—7.5YR or 10YR; ranging to 2.5Y with depth
Value—5 or 6
Chroma—4 to 8; ranging to 2 or 3 with depth
Texture—loamy fine sand or fine sand
Content of rock fragments—0 to 6 percent

E and Bt horizon:
Hue—10YR or 2.5Y (E part); 5YR to 10YR (Bt part)
Value—4 to 8 (E part); 3 to 6 (Bt part)
Chroma—1 to 3 (E part); 4 to 8 (Bt part)
Texture—loamy fine sand, fine sand, loamy sand, or sand
Content of rock fragments—0 to 6 percent

C or Cg horizon:
Hue—10YR to 5Y or N
Value—5 or 6
Chroma—0 to 3
Texture—loamy fine sand, fine sand, or sand
Content of rock fragments—0 to 2 percent

2C or 2Cg horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—1 to 8 percent

Randolph Series

Depth class: Moderately deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Millsdale, Milton

Taxonomic classification: Fine, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon

Randolph silt loam, 0 to 2 percent slopes, in Hancock County, Ohio; Liberty Township; about 1 mile south of Findlay; about 140 feet west and 1,300 feet north of the southeast corner of sec. 26, T. 1 N., R. 10 E.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; common fine and few medium roots; 10 percent intermixing of dark yellowish brown (10YR 4/4) material from the Bt1 horizon; 1 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—11 to 15 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) organic coatings lining old root channels; many medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; 2 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—15 to 18 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and fine subangular blocky structure; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; strongly acid; gradual wavy boundary.

Btg—18 to 25 inches; dark grayish brown (10YR 4/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; abrupt wavy boundary.

2R—25 to 27 inches; light gray (10YR 7/2) limestone.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 3

Texture—loam
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay loam, silty clay, clay loam, clay, or sandy clay loam
Content of rock fragments—0 to 3 percent in the upper part and 2 to 14 percent in the lower part

Rimer Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till
Landform: Flats, rises, and knolls on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Seward, Tedrow, Wauseon

Taxonomic classification: Loamy, mixed, active, mesic Aquic Arenic Hapludalfs

Typical Pedon

Rimer loamy sand, 0 to 2 percent slopes, in Hancock County, Ohio (fig. 17); Portage Township; about 4.5 miles west of Van Buren; about 1,780 feet north and 1,380 feet west of the southeast corner of sec. 5, T. 2 N., R. 10 E.

Ap—0 to 10 inches; dark brown (10YR 3/3) loamy sand, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; very friable; common fine roots; 5 percent intermixing of yellowish brown (10YR 5/4) material from the E1 horizon; moderately acid; abrupt smooth boundary.

E1—10 to 17 inches; yellowish brown (10YR 5/4) loamy sand; weak fine and medium subangular blocky structure; very friable; common fine roots; common medium and coarse faint brown (10YR 5/3) iron depletions in the matrix; common medium and coarse faint dark yellowish brown (10YR 4/4) and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear wavy boundary.

E2—17 to 23 inches; brown (10YR 5/3) loamy sand; weak fine and medium subangular blocky structure; very friable; few fine roots; common fine and medium prominent strong brown (7.5YR 5/6) and few medium faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; clear wavy boundary.

Bt—23 to 28 inches; dark yellowish brown (10YR 4/4) sandy loam with thin strata of loamy sand and sandy clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

Figure 17.—Profile of a Rimer soil. Rimer soils are somewhat poorly drained. They formed in 18 to 36 inches of sandy glaciolacustrine material and in the underlying till. Depth is marked in feet.

2Btg—28 to 35 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few faint very dark grayish brown (10YR 3/2) masses of iron and manganese oxide accumulation on faces of peds; common fine and medium faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

2Bt—35 to 40 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; common distinct gray (10YR 6/1) clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint pale brown (10YR 6/3) masses of calcium carbonate accumulation on vertical faces of peds; few medium faint pale brown (10YR 6/3) moderately cemented

calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC—40 to 54 inches; dark yellowish brown (10YR 4/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few faint pale brown (10YR 6/3) masses of calcium carbonate accumulation on vertical faces of peds; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cd—54 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive with widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulations oriented along fractures; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the A and E horizons: 18 to 36 inches
Thickness of the solum: 25 to 55 inches
Depth to carbonates: 25 to 45 inches
Depth to till: 18 to 36 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 3
Texture—loamy fine sand
Content of rock fragments—0 to 3 percent

E horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 4
Texture—loamy fine sand, fine sand, or loamy sand
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—fine sandy loam, sandy loam, or sandy clay loam
Content of rock fragments—0 to 3 percent

2Bt, 2Btg, 2BC, or 2BCg horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 8 percent

2C, 2Cg, 2Cd, or 2Cdg horizon:
Hue—10YR or 2.5Y
Value—3 to 6

Chroma—1 to 4
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 8 percent

Risingsun Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid to moderately slow in the organic material, moderately rapid in the loamy and sandy part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Herbaceous organic material, loamy and sandy glaciolacustrine deposits, and the underlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Rollersville, Wauseon

Taxonomic classification: Fine-loamy, mixed, superactive, calcareous, mesic Histic Humaquepts

Typical Pedon

Risingsun muck, in an area of Rollersville-Risingsun complex, 0 to 1 percent slopes, in Wood County, Ohio; Montgomery Township; about 1.25 miles south of Bradner; about 1,820 feet south and 1,160 feet west of the northeast corner of sec. 14, T. 4 N., R. 12 E.

Oap—0 to 9 inches; black (10YR 2/1) muck (sapric material), very dark brown (10YR 2/2) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; friable; common very fine and fine roots; slightly acid; clear wavy boundary.

Bg1—9 to 11 inches; dark grayish brown (2.5Y 4/2) silty clay loam (coprogenous earth); weak coarse subangular blocky structure parting to moderate medium platy; firm; common very fine and fine roots; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; few fine prominent brown (7.5YR 5/4) iron oxide concretions in the matrix; neutral; clear wavy boundary.

Bg2—11 to 14 inches; grayish brown (2.5Y 5/2) silt loam; moderate medium subangular blocky structure; firm; common very fine and fine roots; common fine and medium faint gray (10YR 6/1) iron depletions in the matrix; few fine prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/8) masses of iron accumulation in the matrix; common fine and medium prominent white (10YR 8/1) aquatic shells in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bg3—14 to 18 inches; grayish brown (10YR 5/2) sand; weak medium subangular blocky structure; very friable; common very fine roots; common medium and coarse distinct yellowish brown (10YR 5/4) and common fine and medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bg4—18 to 23 inches; gray (10YR 5/1) fine sandy loam with thin strata of silt loam; weak medium subangular blocky structure; friable; few very fine roots; common medium distinct yellowish brown (10YR 5/4) and common fine and medium prominent olive brown (2.5Y 4/4) masses of iron accumulation along relict root channels; common fine prominent strong brown (7.5YR 5/6) masses of iron

accumulation in the matrix; common fine distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Bw—23 to 27 inches; light olive brown (2.5Y 5/4) loamy fine sand with thin strata of silt loam and fine sand; weak medium subangular blocky structure; very friable; common very fine roots; many medium and coarse distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

3BC—27 to 41 inches; light olive brown (2.5Y 5/3) clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few very fine roots; common faint grayish brown (2.5Y 5/2) coatings of fine sand on vertical faces of prisms; many medium and coarse faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

3Cd—41 to 48 inches; light olive brown (2.5Y 5/3) clay loam; massive parting to weak medium platy structure; very firm; few very fine roots; common medium and coarse faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) and distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; few fine distinct gray (10YR 6/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

3Cdg—48 to 80 inches; grayish brown (10YR 5/2) clay loam; massive; very firm; common fine and medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few fine faint very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 4 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the histic epipedon: 7 to 15 inches
Thickness of the solum: 30 to 50 inches
Depth to carbonates: 0 to 15 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Oap horizon:
Hue—10YR, 2.5Y, or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—muck (sapric material)

Bg horizon:
Hue—10YR to 5Y
Value—4 or 5
Chroma—1 to 3
Texture—silt loam or coprogenous silty clay loam

2Bg or 2Bw horizon:
Hue—10YR, 2.5Y, or N
Value—4 to 6

Chroma—0 to 4
Texture—loamy fine sand, fine sand, sand, loamy sand, sandy loam, or fine sandy loam
Content of rock fragments—0 to 10 percent

3BC or 3BCg horizon:
Hue—10YR, 2.5Y, or N
Value—4 or 5
Chroma—0 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

3Cd or 3Cdg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

Ritchey Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Parent material: Loamy till overlying limestone or dolostone
Landform: Flats, rises, and knolls on reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Castalia, Dunbridge, Marblehead, Millsdale, Milton, Randolph

Taxonomic classification: Loamy, mixed, superactive, mesic Lithic Hapludalfs

Typical Pedon

Ritchey loam, 2 to 6 percent slopes, in Erie County, Ohio; Groton Township; about 3 miles southwest of Parkertown; about 4,725 feet south of the intersection of Southwest Road (County Road 1) and Stecker Road (County Road 15) along Southwest Road (County Road 1), then 700 feet east; quadrangle 4; T. 5 N., R. 24 W.

Ap—0 to 8 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak medium and fine granular structure; friable; common fine and very fine roots; 1 percent rock fragments; slightly acid; abrupt smooth boundary.
Bt—8 to 14 inches; reddish brown (5YR 4/4) clay loam; moderate medium and fine subangular blocky structure; firm; few very fine roots; common faint reddish brown (5YR 4/4) clay films on faces of peds; common distinct brown (10YR 4/3) organic coatings on faces of peds; 5 percent rock fragments; neutral; abrupt smooth boundary.
2R—14 to 16 inches; unweathered limestone.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3

Texture—loam
Content of rock fragments—1 to 10 percent

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, silty clay loam, or silt loam
Content of rock fragments—1 to 10 percent

Rollersville Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid in the sandy material, moderately slow or slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till
Landform: Flats on lake plains
Slope: 0 to 1 percent

Adjacent soils: Risingsun, Wauseon

Taxonomic classification: Sandy over loamy, mixed, active, calcareous, mesic Typic Endoaquolls

Typical Pedon

Rollersville fine sandy loam, in an area of Rollersville-Risingsun complex, 0 to 1 percent slopes, in Wood County, Ohio; Montgomery Township; about 1.25 miles south of Bradner; about 880 feet south and 165 feet west of the northeast corner of sec. 14, T. 4 N., R. 12 E.

Ap1—0 to 5 inches; black (10YR 2/1) fine sandy loam, very dark grayish brown (10YR 3/2) dry; weak fine and medium granular structure; very friable; common very fine and fine roots; few fine prominent yellowish red (5YR 5/6) rounded iron and manganese oxide concretions with sharp boundaries in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

Ap2—5 to 11 inches; black (10YR 2/1) fine sandy loam, very dark grayish brown (10YR 3/2) dry; weak medium subangular blocky structure parting to weak fine and medium granular; very friable; common very fine roots; few fine prominent yellowish red (5YR 5/6) iron and manganese oxide concretions with sharp boundaries in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bg1—11 to 16 inches; light brownish gray (10YR 6/2) fine sand; weak fine and medium subangular blocky structure; very friable; common very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings in pores and root channels; many medium and coarse distinct yellowish brown (10YR 5/4) and common fine and medium distinct brown (7.5YR 4/4) masses of iron accumulation in the matrix; few fine prominent strong brown (7.5YR 5/6) and dark brown (7.5YR 3/4) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg2—16 to 27 inches; grayish brown (10YR 5/2) fine sand with thin strata of silt loam and fine sandy loam; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) and common fine and medium prominent strong brown (7.5YR 5/6) masses of iron

accumulation in the matrix; few fine distinct dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg3—27 to 33 inches; grayish brown (2.5Y 5/2) sand; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; many medium and coarse faint light olive brown (2.5Y 5/3) and common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bg4—33 to 38 inches; grayish brown (2.5Y 5/2) fine sand; weak medium and coarse subangular blocky structure; very friable; few very fine roots; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; many medium and coarse faint light olive brown (2.5Y 5/3) and common fine and medium prominent brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine prominent dark brown (7.5YR 3/2) iron and manganese oxide concretions in the matrix; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2BC—38 to 52 inches; olive brown (2.5Y 4/3) clay loam; weak medium and coarse subangular blocky structure; firm; few very fine roots; few faint grayish brown (2.5Y 5/2) coatings of fine sand on vertical faces of peds; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation along relict root channels; common fine distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cd—52 to 62 inches; olive brown (2.5Y 4/3) clay loam; massive with weak medium platy partings; very firm; common fine and medium faint grayish brown (2.5Y 5/2) iron depletions along relict root channels; common fine and medium faint yellowish brown (10YR 5/4) masses of iron accumulation along relict root channels; common fine distinct brown (7.5YR 5/4) masses of iron accumulation in the matrix; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cdg—62 to 80 inches; gray (10YR 5/1) clay loam; massive; very firm; common fine and medium prominent brown (7.5YR 5/4) masses of iron accumulation in the matrix; few fine and medium faint light gray (10YR 7/1) masses of calcium carbonate accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 14 inches
Thickness of the solum: 30 to 55 inches
Carbonates: Occurring in all horizons
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—fine sandy loam
Content of rock fragments—0 to 5 percent

Bg horizon:
Hue—10YR, 2.5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—loamy fine sand, fine sand, sand, or loamy sand, commonly stratified; strata of sandy loam or fine sandy loam in some pedons
Content of rock fragments—0 to 10 percent

2BC or 2BCg horizon:
Hue—10YR, 2.5Y, or N
Value—4 or 5
Chroma—0 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

2Cd and 2Cdg horizons:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

Rossburg Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum and moderately rapid in the substratum
Parent material: Loamy alluvium
Landform: Flats, rises, and natural levees on flood plains
Slope: 0 to 2 percent

Adjacent soils: Landes, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon

Rossburg silt loam, occasionally flooded, in Sandusky County, Ohio; Ballville Township; about 3.5 miles south-southwest of Ballville; about 580 feet east and 1,815 feet south of the northwest corner of sec. 29, T. 4 N., R. 15 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium and fine granular structure; friable; many roots; neutral; clear smooth boundary.

A—9 to 21 inches; dark brown (10YR 3/3) silt loam, brown (10YR 4/3) dry; weak medium and fine subangular blocky structure parting to moderate medium granular; friable; many roots; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; clear smooth boundary.

Bw1—21 to 33 inches; brown (10YR 4/3) loam; weak coarse and medium subangular blocky structure; friable; common roots; few very dark grayish brown (10YR 3/2) wormcasts; neutral; clear smooth boundary.

Bw2—33 to 41 inches; dark yellowish brown (10YR 4/4) loam; weak medium and fine subangular blocky structure; friable; few roots; few thin strata of very dark grayish brown (10YR 3/2) material; few coarse faint brown (10YR 5/3) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few dark grayish brown (10YR 4/2) wormcasts; neutral; abrupt smooth boundary.

Bw3—41 to 49 inches; yellowish brown (10YR 5/4) fine sandy loam with thin lenses of silt loam and loam; weak fine subangular blocky structure; friable; few roots; neutral; clear smooth boundary.
C—49 to 60 inches; dark yellowish brown (10YR 4/4) fine sandy loam with thin lenses of silt loam and loam; massive; friable; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the solum: 24 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—0 to 5 percent

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 6
Texture—silt loam or loam; fine sandy loam and sandy loam included in the range in the lower part
Content of rock fragments—0 to 10 percent

C horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, silt loam, fine sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments—0 to 20 percent to a depth of 48 inches; 0 to 34 percent below a depth of 48 inches; up to 50 percent in individual strata

Seward Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid in the sandy part of the solum, moderately rapid in the loamy part of the solum, slow in the lower part of the solum that formed in till, and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine deposits and the underlying till
Landform: Rises and knolls on beach ridges and dunes on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Rimer, Tedrow, Wauseon

Taxonomic classification: Coarse-loamy over clayey, mixed over illitic, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Seward loamy fine sand, 2 to 6 percent slopes, in Henry County, Ohio; Ridgeville Township; about 1 mile southwest of Ridgeville Corners; about 1,200 feet west and 300 feet north of the southeast corner of sec. 34, T. 6 N., R. 5 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loamy fine sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

E1—10 to 21 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; common fine roots; few fine faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix in the lower part of the horizon; slightly acid; clear wavy boundary.

E2—21 to 26 inches; brown (7.5YR 4/4) loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; many fine distinct pale brown (10YR 6/3) iron depletions in the matrix; many fine faint yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; few prominent black (5YR 2.5/1) iron and manganese oxide stains on faces of peds; slightly acid; gradual wavy boundary.

Bt1—26 to 34 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; many medium faint pale brown (10YR 6/3) iron depletions in the matrix; many medium faint brown (7.5YR 4/4) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

2Bt2—34 to 40 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; very firm; common distinct dark brown (10YR 3/3) clay films on faces of peds; many fine prominent gray (5Y 6/1) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 4 percent rock fragments; slightly alkaline; gradual wavy boundary.

2Cd—40 to 80 inches; brown (10YR 4/3) clay; massive with widely spaced vertical fractures; very firm; many prominent gray (5Y 5/1) and greenish gray (5GY 6/1) coatings; few distinct light gray (10YR 7/1) calcium carbonate coatings on faces of vertical fractures; common fine distinct gray (10YR 6/1) iron depletions in the matrix; 4 percent rock fragments; slightly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the A and E horizons: 18 to 36 inches
Thickness of the solum: 35 to 50 inches
Depth to carbonates: 34 to 48 inches
Depth to till: 18 to 36 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture—loamy fine sand
Content of rock fragments—0 to 3 percent

E horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture—loamy fine sand, fine sand, or loamy sand
Content of rock fragments—0 to 3 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4

Texture—fine sandy loam or sandy loam with strata of sandy clay loam
Content of rock fragments—0 to 3 percent

2Bt or 2Btg horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 8 percent

2C, 2Cg, 2Cd, or 2Cdg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 8 percent

Shawtown Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Parent material: Stratified glaciolacustrine deposits overlying till
Landform: Rises and knolls on beach ridges on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Alvada, Aurand, Cygnet, Oshtemo

Taxonomic classification: Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Shawtown loam, 2 to 6 percent slopes, in Hancock County, Ohio; Pleasant Township; about 1 mile west of McComb; about 2,280 feet east and 280 feet south of the northwest corner of sec. 27, T. 2 N., R. 9 E.

Ap—0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; few fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—9 to 21 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent rock fragments; strongly acid; gradual wavy boundary.

Bt2—21 to 33 inches; dark yellowish brown (10YR 4/4) gravelly clay loam with strata of clay loam; moderate medium subangular blocky structure; friable; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Bt3—33 to 48 inches; yellowish brown (10YR 5/4) gravelly loam; moderate medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) and common medium faint brown (10YR 5/3) iron depletions in the matrix; 20 percent rock fragments; neutral; clear wavy boundary.

Bt4—48 to 55 inches; brown (10YR 5/3) gravelly loam with strata of gravelly sandy loam; weak medium and coarse subangular blocky structure; very friable; common

faint brown (10YR 5/3) clay films on faces of peds and occurring as bridges between sand grains; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 20 percent rock fragments; slightly effervescent discontinuously in the lower part; neutral; clear wavy boundary.

Cg—55 to 63 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand with strata of loamy sand; single grain; loose; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 20 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cd—63 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive with widely spaced vertical fractures; very firm; common fine distinct gray (10YR 5/1) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 35 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to till: 50 to 70 inches
Depth to dense material: 50 to 70 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—loam
Content of rock fragments—1 to 14 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture—loam, clay loam, sandy clay loam, coarse sandy loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments—5 to 25 percent

C or Cg horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 4
Texture—loamy sand, loamy coarse sand, coarse sandy loam, or sandy loam or the gravelly or very gravelly analogs of these textures; thin strata of fine sandy loam, sand, or silt loam in some pedons
Content of rock fragments—5 to 45 percent

2Cd or Cdg horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam, silty clay loam, or clay loam
Content of rock fragments—1 to 7 percent

Shoals Series

Depth class: Very deep; moderately deep or deep in the bedrock phase
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Loamy alluvium; loamy alluvium overlying limestone or dolostone in the bedrock phase
Landform: Flats and rises on flood plains
Slope: 0 to 2 percent

Adjacent soils: Eel, Flatrock, Genesee, Sloan

Taxonomic classification: Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Shoals silt loam, 0 to 2 percent slopes, occasionally flooded, in Hancock County, Ohio; Allen Township; about 1.2 miles northwest of Van Buren; about 1,380 feet east and 280 feet south of the northwest corner of sec. 12, T. 2 N., R. 10 E.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; few coarse and common fine and medium roots; neutral; clear smooth boundary.

Bg—11 to 16 inches; grayish brown (10YR 5/2) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine prominent (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bw1—16 to 21 inches; brown (10YR 5/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw2—21 to 32 inches; dark yellowish brown (10YR 4/4) silt loam with thin strata of loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; many distinct grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw3—32 to 41 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine faint very dark grayish brown (10YR 3/2)

moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear smooth boundary.

B´g—41 to 59 inches; grayish brown (2.5Y 5/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; few distinct (10YR 4/2) coatings in pores and old root channels and on vertical faces of peds; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual smooth boundary.

Cg—59 to 80 inches; grayish brown (2.5Y 5/2) loam with strata of silt loam and sandy loam; massive; friable; few medium and coarse prominent strong brown (7.5YR 5/6) and common medium and coarse distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; 10 percent rock fragments in the sandy loam strata; slightly alkaline.

Range in Characteristics

Thickness of the solum: 20 to 60 inches
Depth to carbonates: 20 to more than 60 inches
Depth to bedrock: More than 48 inches but typically more than 60 inches; 20 to 42 inches in the bedrock phase

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 3
Texture—silt loam, loam, or silty clay loam
Content of rock fragments—0 to 3 percent

Bg or Bw horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—dominantly silt loam or loam; less commonly fine sandy loam, sandy loam, clay loam, sandy clay loam, or silty clay loam
Content of rock fragments—0 to 3 percent

C or Cg horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 6
Texture—loam, sandy loam, fine sandy loam, clay loam, silty clay loam, or silt loam; commonly stratified
Content of rock fragments—0 to 14 percent

Sloan Series

Depth class: Very deep; moderately deep or deep in the bedrock phase
Drainage class: Very poorly drained
Permeability: Moderately slow or moderate
Parent material: Loamy alluvium; loamy alluvium overlying limestone or dolostone in the bedrock phase
Landform: Flats and backswamps on flood plains
Slope: 0 to 1 percent

Adjacent soils: Eel, Flatrock, Genesee, Rossburg, Shoals

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls

Typical Pedon

Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded, in Hancock County, Ohio; Blanchard Township; about 3.5 miles northwest of Benton Ridge; about 2,240 feet north and 740 feet east of the southwest corner of sec. 16, T. 1 N., R. 9 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; firm; common fine roots; 2 percent rock fragments; neutral; clear smooth boundary.

Bg1—11 to 21 inches; dark gray (10YR 4/1) clay loam; weak fine and medium subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg2—21 to 27 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent (7.5YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; clear wavy boundary.

Bg3—27 to 32 inches; gray (10YR 5/1) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and common medium and coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few dark gray (10YR 4/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg4—32 to 47 inches; gray (10YR 5/1) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium and coarse distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few dark gray (10YR 4/1) krotovinas; 3 percent rock fragments; neutral; gradual wavy boundary.

Bg5—47 to 58 inches; gray (10YR 5/1) clay loam with strata of clay; weak medium and coarse subangular blocky structure; firm; few faint gray (10YR 5/1) coatings on faces of peds; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Cg1—58 to 75 inches; gray (10YR 5/1) loam with strata of clay loam; massive; firm; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; 4 percent rock fragments; neutral; abrupt wavy boundary.

Cg2—75 to 80 inches; gray (10YR 5/1) silty clay loam with thin strata of silt loam and silty clay; massive; firm; common medium distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 1 percent rock fragments; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 8 to 23 inches
Thickness of the solum: 20 to 60 inches
Depth to carbonates: 22 to more than 80 inches
Depth to bedrock: More than 60 inches; 20 to 42 inches in the bedrock phase

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

Bg horizon:
Hue—10YR to 5Y or N
Value—3 to 5
Chroma—0 to 2
Texture—clay loam, silty clay loam, loam, or silt loam
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Hue—10YR to 5Y
Value—3 to 6
Chroma—1 to 4
Texture—clay loam, silty clay loam, loam, silt loam, or sandy loam or the gravelly analogs of these textures; commonly stratified
Content of rock fragments—0 to 34 percent

Spinks Series

Depth class: Very deep or deep
Drainage class: Well drained
Permeability: Moderately rapid or rapid in the upper part of the solum and moderately rapid in the lower part of the solum
Parent material: Sandy eolian or glaciolacustrine deposits; underlain by limestone or dolostone in the deep to limestone phase
Landform: Rises and knolls on dunes and beach ridges on lake plains; deep to limestone phase—reefs on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 18 percent

Adjacent soils: Dunbridge, Ottokee, Tedrow

Taxonomic classification: Sandy, mixed, mesic Lamellic Hapludalfs

Typical Pedon

Spinks fine sand, 6 to 12 percent slopes, in Fulton County, Ohio (fig. 18); Pike Township; about 2.5 miles east of Winameg; about 1,250 feet north and 775 feet west of the southeast corner of sec. 1, T. 10 S., R. 3 E.

Ap—0 to 8 inches; brown (10YR 4/3) fine sand, brown (10YR 5/3) dry; single grain; loose; few fine roots; moderately acid; abrupt smooth boundary.
E—8 to 18 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; common medium roots; moderately acid; abrupt smooth boundary.
E and Bt—18 to 64 inches; yellowish brown (10YR 5/4) fine sand (E); single grain; loose; brown (7.5YR 4/4) loamy fine sand (Bt) occurring as lamellae; weak fine subangular blocky structure; friable; few medium roots; moderately acid; abrupt wavy boundary.
C—64 to 80 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; few coarse distinct white (10YR 8/1) calcium carbonate accumulations in the matrix; strongly effervescent; moderately alkaline.

Figure 18.—Profile of a Spinks soil. Note the alternating E and Bt horizons. The thin lamellae (Bt horizon) become progressively thinner and more pronounced with increasing depth. The spade is 36 inches long.

Range in Characteristics

Depth to the first lamellae: 15 to 40 inches
Thickness of the solum: 36 to more than 60 inches
Depth to carbonates: 36 to more than 60 inches
Depth to bedrock: More than 60 inches; 42 to 60 inches in the deep to limestone phase

Ap or A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 4
Texture—loamy fine sand or fine sand
Content of rock fragments—0 to 5 percent

E horizon:
Hue—7.5YR or 10YR
Value—4 to 7

Chroma—2 to 8
Texture—fine sand, sand, loamy sand, or loamy fine sand
Content of rock fragments—0 to 5 percent

E and Bt horizon:
Hue—10YR (E part); 5YR to 10YR (Bt part)
Value—4 to 7 (E part); 3 to 5 (Bt part)
Chroma—2 to 8 (E part); 2 to 6 (Bt part)
Texture—sand, loamy sand, fine sand, or loamy fine sand
Content of rock fragments—0 to 5 percent

C horizon:
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—2 to 6
Texture—sand or fine sand
Content of rock fragments—0 to 5 percent

St. Clair Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Wave-planed till
Landform: Rises, knolls, and dissected areas along streams on lake plains
Position on the landform: Summits, shoulders, and backslopes
Slope: 2 to 25 percent

Adjacent soils: Nappanee, Hoytville

Taxonomic classification: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon

St. Clair silty clay loam, 6 to 12 percent slopes, eroded, in Paulding County, Ohio; Jackson Township; about 1 mile east-northeast of Paulding; about 900 feet south and 360 feet east of the northwest corner of sec. 8, T. 2 N., R. 3 E.

Ap—0 to 6 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; firm; common fine and few medium roots; 15 percent intermixing of yellowish brown (10YR 5/4) subsoil material; 2 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt1—6 to 17 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; common fine roots; common faint yellowish brown (10YR 5/4) and brown (10YR 5/3) clay films on faces of peds; common fine and medium faint brown (10YR 5/3) iron depletions in the lower part of the horizon; common medium distinct black (10YR 2/1) masses of iron and manganese accumulation in the matrix; 2 percent rock fragments; slightly acid; clear wavy boundary.

Bt2—17 to 22 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct grayish brown (10YR 5/2) and many faint brown (10YR 5/3) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium distinct black (10YR 2/1) masses of iron and manganese accumulation in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

BC—22 to 32 inches; yellowish brown (10YR 5/4) silty clay; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots on faces of prisms; common faint brown (10YR 5/3) and many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation on faces of prisms; 5 percent rock fragments; slightly effervescent; slightly alkaline; clear wavy boundary.

C1—32 to 40 inches; yellowish brown (10YR 5/4) clay loam; massive; very firm; grayish brown (10YR 5/2) coatings on vertical partings; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

C2—40 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive; very firm; distinct grayish brown (10YR 5/2) coatings on vertical partings; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 20 to 48 inches
Depth to carbonates: 18 to 30 inches
Depth to bedrock: More than 48 inches; typically more than 60 inches

Ap or A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—1 to 3
Texture—silty clay loam or loam
Content of rock fragments—0 to 14 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay or clay
Content of rock fragments—0 to 14 percent

C or Cg horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—1 to 4
Texture—silty clay, clay, clay loam, or silty clay loam
Content of rock fragments—1 to 14 percent

Tedrow Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid; till substratum phase—rapid in the sandy solum and slow or very slow in the till substratum
Parent material: Sandy glaciolacustrine or eolian deposits; till substratum phase—sandy glaciolacustrine deposits overlying till
Landform: Flats, rises, and knolls on beach ridges and dunes on lake plains

Position on the landform: Summits, shoulders, and backslopes
Slope: 0 to 6 percent

Adjacent soils: Granby, Ottokee, Spinks

Taxonomic classification: Mixed, mesic Aquic Udipsamments

Typical Pedon

Tedrow loamy fine sand, 0 to 2 percent slopes, in Henry County, Ohio; Washington Township; about 4.5 miles east of Liberty Center; about 1,550 feet north and 520 feet west of the southeast corner of sec. 27, T. 6 N., R. 8 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy fine sand, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; many roots; neutral; abrupt smooth boundary.

Bw1—8 to 16 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; common roots; few fine faint pale brown (10YR 6/3) iron depletions in the matrix; few fine faint brown (10YR 4/3) and few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

Bw2—16 to 31 inches; brown (10YR 5/3) loamy fine sand; single grain; loose; few roots; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) and many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; slightly acid; clear wavy boundary.

BC—31 to 33 inches; pale brown (10YR 6/3) fine sand; single grain; loose; many coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; many coarse faint light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

C—33 to 60 inches; pale olive (5Y 6/3) fine sand; single grain; loose; common medium distinct gray (5Y 6/1) and many medium faint olive (5Y 5/3) iron depletions in the matrix; common medium faint light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 24 to 54 inches
Depth to carbonates: 24 to more than 60 inches
Depth to till: More than 60 inches; 30 to 48 inches in the till substratum phase
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 3
Texture—loamy fine sand
Content of rock fragments—0 to 2 percent

Bw or Bg horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 6 to a depth of 20 inches; 1 to 6 below a depth of 20 inches
Texture—loamy sand, loamy fine sand, sand, or fine sand
Content of rock fragments—0 to 2 percent

C or Cg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 4

Texture—fine sand or sand
Content of rock fragments—0 to 2 percent

2C horizon (if it occurs):
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 to 4
Texture—clay, silty clay, silty clay loam, or clay loam
Content of rock fragments—1 to 8 percent

Toledo Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Clayey glaciolacustrine deposits
Landform: Extensive flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent

Adjacent soils: Fulton, Latty (till substratum)

Taxonomic classification: Fine, illitic, nonacid, mesic Mollic Endoaquepts

Typical Pedon

Toledo silty clay, in Erie County, Ohio; Margaretta Township; about 0.5 mile east of Springbrook; about 200 feet west and 350 feet north of the southeast corner of sec. 34, T. 6 N., R. 17 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate very fine subangular blocky structure; firm; moderately acid; abrupt smooth boundary.

Bg1—9 to 18 inches; dark gray (10YR 4/1) silty clay; strong fine and medium angular blocky structure; firm; few fine pores on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; neutral; clear smooth boundary.

Bg2—18 to 25 inches; dark gray (5Y 4/1) clay; strong medium and coarse angular blocky structure; very firm; common fine pores on faces of peds; common medium prominent dark yellowish brown (10YR 4/4) and olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg3—25 to 45 inches; gray (5Y 5/1) silty clay; weak coarse prismatic structure parting to strong medium and coarse angular blocky; very firm; many medium prominent light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; neutral; clear wavy boundary.

Cg—45 to 80 inches; light brownish gray (2.5Y 6/2) silty clay with thin strata of silty clay loam and silt loam; massive; firm; many coarse faint gray (10YR 5/1) iron depletions in the matrix; many coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to carbonates: 30 to 57 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N

Value—2, 2.5, or 3
Chroma—0 to 2
Texture—silty clay loam

Bg horizon:
Hue—10YR to 5Y or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay or clay; silty clay loam in the upper part in a few pedons

C or Cg horizon:
Hue—10YR to 5Y or N
Value—4 to 6
Chroma—0 to 6
Texture—commonly silty clay or clay; silty clay loam included in the range

Wabasha Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Clayey alluvium
Landform: Flats and backswamps on flood plains
Slope: 0 to 1 percent

Adjacent soils: Eel, Shoals

Taxonomic classification: Fine, illitic, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Wabasha silty clay, in Henry County, Ohio; Liberty Township; about 2.75 miles northwest of Liberty Center; about 2,540 feet west and 250 feet south of the northeast corner of sec. 22, T. 6 N., R. 7 E.

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate medium granular structure; friable; common fine roots; slightly alkaline; abrupt smooth boundary.

Bg1—7 to 16 inches; dark gray (2.5Y 4/1) silty clay; weak coarse prismatic structure parting to moderate medium angular blocky; firm; common fine roots; few fine prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Bg2—16 to 22 inches; gray (N 5/0) silty clay; moderate coarse prismatic structure parting to moderate medium and coarse angular blocky; firm; common fine roots; distinct dark gray (10YR 4/1) coatings on faces of peds and few fine prominent brown (7.5YR 4/4) hypocoats; common fine distinct olive gray (5Y 5/2) iron depletions in the matrix; common fine prominent brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; clear smooth boundary.

Bg3—22 to 29 inches; gray (5Y 5/1) silty clay; moderate coarse prismatic structure parting to moderate medium angular blocky; firm; common fine roots; many prominent dark gray (10YR 4/1) coatings on faces of peds and few fine prominent reddish brown (5YR 4/4) hypocoats; common fine faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine prominent olive brown (2.5Y 4/4) and brown (7.5YR 4/4) masses of iron accumulation in the matrix; slightly alkaline; gradual smooth boundary.

Bg4—29 to 48 inches; gray (5Y 5/1) silty clay; moderate coarse prismatic structure parting to moderate coarse angular blocky; firm; few fine roots; many faint dark

gray (5Y 4/1) coatings on faces of peds; common medium distinct olive (5Y 5/3) and prominent dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly effervescent in the lower part; slightly alkaline; gradual wavy boundary.

C—48 to 60 inches; yellowish brown (10YR 5/4) clay; massive with some vertical partings; firm; few very thin layers of sand; many prominent gray (5Y 5/1) coatings on vertical partings; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the dark epipedon: 7 to 9 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to more than 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Hue—10YR or 2.5Y
Value—2, 2.5, or 3
Chroma—1 or 2
Texture—silty clay
Content of rock fragments—0 to 1 percent

Bg horizon:
Hue—10YR to 5Y or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay or clay
Content of rock fragments—0 to 1 percent; 0 to 7 percent in the lower part

C or Cg horizon:
Hue—10YR to 5Y or N
Value—4 to 6
Chroma—0 to 4
Texture—silty clay or clay; less commonly silty clay loam or clay loam; thin layers of sand, loamy fine sand, fine sandy loam, or silt loam in some pedons
Content of rock fragments—0 to 7 percent

Wauseon Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the solum and slow or very slow in the substratum; deep to till phase—moderately rapid in the solum, rapid in the sandy substratum, and slow or very slow in the till substratum
Parent material: Loamy and sandy glaciolacustrine deposits and the underlying till
Landform: Flats, depressions, and drainageways on lake plains and deltas
Slope: 0 to 1 percent

Adjacent soils: Rimer, Seward

Taxonomic classification: Coarse-loamy over clayey, mixed over illitic, superactive, mesic Typic Epiaquolls
Taxadjunct features: The surface layer of the Wauseon soil in map unit WnA does not meet the thickness requirement for a mollic epipedon. This soil is classified as a coarse-loamy over clayey, mixed over illitic, superactive, nonacid, mesic Mollic Epiaquept.

Typical Pedon

Wauseon fine sandy loam, in Fulton County, Ohio; Pike Township; about 1.5 miles northeast of Winameg, about 195 feet north and 1,495 feet west of the southeast corner of sec. 34, T. 9 S., R. 3 E.

Ap—0 to 9 inches; black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak coarse subangular blocky structure parting to moderate fine granular; friable; few fine roots; slightly acid; gradual smooth boundary.

A—9 to 13 inches; black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; slightly acid; abrupt wavy boundary.

Bg1—13 to 21 inches; dark gray (10YR 4/1) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine prominent yellowish brown (10YR 5/6) and olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; slightly acid; gradual wavy boundary.

Bg2—21 to 28 inches; dark gray (10YR 4/1) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium distinct yellowish brown (10YR 5/4) and prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Bg3—28 to 32 inches; dark gray (10YR 4/1) sandy clay loam; moderate medium subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; slightly effervescent; slightly alkaline; abrupt wavy boundary.

2BC—32 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) and few fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine and medium distinct light gray (10YR 7/1) masses of calcium carbonate accumulation on vertical faces of prisms; 5 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

2C—36 to 58 inches; brown (10YR 4/3) clay loam; massive with widely spaced vertical partings; very firm; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; very few fine and medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation on faces of partings; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd—58 to 80 inches; brown (10YR 4/3) clay loam; massive; very firm; many medium and coarse distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 8 to 18 inches
Thickness of the solum: 24 to 40 inches
Depth to carbonates: 24 to 40 inches; 24 to 60 inches in the deep to till phase
Depth to till: 18 to 48 inches; 48 to 60 inches in the deep to till phase
Depth to bedrock: More than 60 inches

Ap or A horizon:

Hue—10YR or N
Value—2, 2.5, or 3
Chroma—0 to 2
Texture—fine sandy loam or loamy fine sand
Content of rock fragments—0 to 3 percent

Bg horizon:

Hue—10YR to 5Y
Value—3 to 6
Chroma—1 or 2
Texture—fine sandy loam, sandy loam, loamy fine sand, or very fine sand; subhorizons of sandy clay loam less than 5 inches thick
Content of rock fragments—0 to 3 percent

Cg horizon (if it occurs):

Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—sandy loam, fine sandy loam, loamy fine sand, or fine sand
Content of rock fragments—0 to 3 percent

2C, 2Cg, 2Cd, or 2Cdg horizon:

Hue—5YR to 5Y
Value—4 to 6
Chroma—1 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Formation of the Soils

In this section the major factors of soil formation are described and related to the soils in Wood County. Also, some of the processes of soil formation are described.

Factors of Soil Formation

Soil is a three-dimensional natural body capable of supporting plant growth. The nature of the soil at a specific site is the result of the interaction of many factors and processes. There are five major factors of soil formation. These are parent material, climate, living organisms, relief, and time (Jenny, 1941).

Parent Material

The material in which a soil formed is called parent material. Most of the parent material in Wood County was deposited by the last glacier that covered the area, thousands of years ago, or by meltwater from this glacier. Other parent material includes older dolostone or limestone bedrock, more recent alluvium deposited by modern-day streams, and organic deposits from decaying plants.

The till contains particles ranging in size from clay to large stones. Most pebbles are angular, indicating little water action. Although most of the material in the till is of local origin, some igneous stones were carried from parts of Canada. The till at the surface was deposited during the Wisconsinan glaciation.

Most of the till in the county was subject to modification by water action during various stages of lake formation during and after the Wisconsinan glaciation. Wave-planed till primarily occupies the surficial deposits in most of the county. Hoytville, Nappanee, and St. Clair soils formed in wave-planed till.

Loamy and sandy sediments were deposited by water or wave action along old lake shorelines or as longshore bars and deltas. The loamy Belmore, Cygnet, Digby, Haney, Oshtemo, and Shawtown soils formed in sandy and/or gravelly beach deposits and terraces along old shorelines. The sandy Granby, Ottokee, Seward, Spinks, Tedrow, and Wauseon soils formed on beach ridges and dunes.

As the streams lost gradient or stream velocity, the finer sand and silt particles were deposited as deltas and bars and in local lake basins. Colwood, Kibbie, and Wauseon soils formed in sandy, loamy, and silty sediments. Where the streams flowed into local lakes, the finer particles settled out of the still water.

Clayey glaciolacustrine deposits are limited in Wood County. They occur in the extreme northern part of the county. Fulton, Latty, and Toledo soils formed in the clayey sediment.

Dolostone or limestone is among the parent materials in Wood County. The Castalia, Dunbridge, Joliet, Marblehead, Millsdale, Milton, Randolph, and Ritchey soils are underlain with dolostone or limestone. This limestone has a very high calcium carbonate equivalent, but it is not violently effervescent because of its dolomitic nature.

Alluvium is the parent material of the soils on flood plains. It consists of material that accumulates when fresh sediments are added by stream overflow. The deposits vary widely, depending on the stream gradient and the source of the sediment. Alluvial sediment is stratified because deposition occurs in three basic stages. Gravel and

stones are deposited on the streambed; sand is deposited as bars along the inner banks of meanders; and sand, silt, and clay are deposited during flooding. Eel, Flatrock, Genesee, Landes, Rossburg, Shoals, Sloan, and Wabasha soils formed in alluvium.

The upper part of Risingsun soils formed in decayed plant material that accumulated in marshes. The permanent wetness slowed decomposition and thus allowed the organic material to accumulate.

Climate

The climate in Wood County is uniform enough that it has not greatly contributed to differences among the soils. It has favored physical change and chemical weathering of the parent material and the activity of living organisms.

The amount of precipitation varies as a result of microclimate. Runoff on steep slopes reduces the amount of effective precipitation, and drainage in depressions increases it. Rainfall has been adequate to leach from the upper part of the subsoil any carbonates that were in the parent material of some of the soils on uplands and terraces. Wetting and drying cycles have resulted in the translocation of clay minerals and the formation of soil structure.

The range in temperature has favored both physical change and chemical weathering of the parent material. Freezing and thawing aided the formation of soil structure. Warm temperatures in summer favored chemical reactions in the weathering of the primary minerals. Rainfall and temperatures have been conducive to plant growth and the accumulation of organic matter in all of the soils.

Living Organisms

The vegetation under which a soil forms influences several soil properties, such as soil color, structure, reaction, and content and distribution of organic matter. The surface layer of soils that formed under trees is generally lighter in color than that of soils that formed under grass because grasses generally return more organic matter to the soil. Grasses also provide shelter for many burrowing animals, which alter the structure and thickness of soil horizons. Earthworms, burrowing insects, and small animals are constantly mixing the soil, making it more porous, and adding organic residue. Bacteria, fungi, and other micro-organisms contribute to the breakdown of organic residue. Generally, fungi are more active in acid soils and bacteria are more active in alkaline soils.

About five native plant communities made up the original vegetation of Wood County. The dominant type is the elm-ash swamp forest community. The forest consists of American elm, black ash, red maple, pin oak, swamp white oak, and hickory. This community is associated with very poorly drained soils, such as Hoytville, Latty (till substratum), Mermill, and Toledo soils.

The beech forest consists of beech, sugar maple, red oak, white ash, white oak, and basswood as the common species (Gordon, 1966). This community is associated with better drained soils, such as Belmore, Dunbridge, Haney, Milton, Oshtemo, Ottokee, and Spinks soils.

The mixed oak forest consisted of many primary forest types but was mainly white oak, black oak, and northern red oak. This community is associated with the better drained and more permeable soils, such as Ottokee and Tedrow soils, and with highly productive soils, such as Colwood and Kibbie soils.

The prairie plant communities are associated with the somewhat poorly drained Aurand and Kibbie soils and the very poorly drained Colwood and Mermill soils.

A rather small area of oak savannah consisted of oak species associated with moderately well drained or well drained, permeable soils, such as Ottokee and Spinks soils (Gordon, 1966).

Human activities also affect soil formation. Examples of these activities are cultivation, seeding, artificial drainage, irrigation, and cutting and filling. Accelerated erosion caused by clearing and cultivating the more sloping soils, such as Nappanee and St. Clair soils, illustrates the impact of humans on soil formation. Loss of surface soil and compaction of the subsoil affect runoff and plant growth. Large areas of the Hoytville, Latty (till substratum), and Mermill soils have been systematically drained by ditches and subsurface drains.

Draining reduces the content of organic matter and affects the processes of soil formation. Adding lime or fertilizer also affects the long-term development of the soil.

Relief

Relief, along with parent material, affects the natural drainage of soils. It influences the amount of runoff and the depth to the water table. Generally, the steeper soils have better drainage than the nearly level soils. If the extent of drainage differs, different soils can form in the same parent material. For example, both Hoytville and St. Clair soils formed in till deposits. St. Clair soils are in the higher or more sloping positions, and the water table generally is not as close to the surface. They are moderately well drained. Hoytville soils, however, are in low-lying, level areas, and the water table is near or above the surface. Hoytville soils are very poorly drained.

A drainage sequence, or catena, is a group of soils that formed in the same parent material but differ in the extent of natural drainage. For example, the moderately well drained St. Clair soils, the somewhat poorly drained Nappanee soils, and the very poorly drained Hoytville soils make up a drainage sequence. All of these soils formed in till.

Time

The length of time the parent material has been exposed to the soil-forming processes influences the nature of the soil that forms. The youngest soils in Wood County, such as Eel, Flatrock, Genesee, Landes, Rossburg, Shoals, Sloan, and Wabasha soils, formed in recent stream deposits. Younger soils have horizons that are less well defined than those of the older soils.

The glacial deposits of Wisconsinan age in Wood County are geologically young, but enough time has elapsed for the active forces of climate and plants and animals to produce the formation of distinct soil horizons. In most of the soils, carbonates have been leached, structure has developed in the subsoil, and organic matter has accumulated in the surface layer.

Processes of Soil Formation

Soil forms through complex, continuing processes. These processes are grouped into four general categories: additions, removals, transfers, and alterations.

The accumulation of organic matter in the formation of mineral soils is an example of an addition. The addition of organic residue has produced a dark surface layer. The upper part of the parent material originally was not darker than the lower part.

The loss of lime from the upper 2 to 4 feet of many of the soils in Wood County is an example of the removal process. Although the parent material was limy (calcareous), water percolating through the soil has leached the lime from the upper part of the soil.

Water is the carrier for most of the transfers that have occurred in the soils in Wood County. Clay has been transferred from the A and E horizons to the B horizon in many

of the soils. The A and E horizons (especially the E horizon) have become a zone of eluviation, and the B horizon has become a zone of illuviation. Thin clay films are in pores and on surfaces of peds in the B horizon of some soils. The clay has been transferred from the A horizon. The presence or absence of clay films is an important criterion in soil classification.

The reduction and solution of ferrous iron is an example of an alteration process. This process has taken place in the very poorly drained soils and, to a lesser extent, in the somewhat poorly drained and moderately well drained soils. Reduction of iron, or gleying, is prominent in the very poorly drained Alvada, Colwood, Hoytville, Latty (till substratum), Mermill, Millgrove, Millsdale, Sloan, Toledo, Wabasha, and Wauseon soils. This process is the result of a recurring water table. Gray soil indicates gleying. Reduced iron is soluble. The iron in the soils of Wood County, however, commonly has remained in the horizon where it originated or has settled in an underlying horizon. Iron can be reoxidized and segregated in places to form yellowish brown mottles that are brighter than the surrounding soil. The alteration of iron causes mottling in soils that are not well drained.

To a varying degree, all of the soils in Wood County have been affected by each of the four soil-forming processes. The accumulation of organic matter has been prominent in the formation of Risingsun soils. The removal of carbonates and the transfer of clay have been important in the formation of Nappanee and St. Clair soils.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the “National Soil Survey Handbook” (available in local offices of the Natural Resources Conservation Service or on the Internet).

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Beach ridge. A low, essentially continuous mound of beach or beach and dune material heaped up by the action of waves and currents on the backshore of a beach, beyond the present limit of storm waves, and occurring singly or as one of a series or approximately parallel deposits. These ridges define the limits of relict lakes.

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey soil. Soil that contains more than 35 percent clay.

Claypan. A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Compaction. Any process by which the mineral grains of soil are rearranged to reduce void space and to bring the grains into closer contact with one another, thereby increasing the weight of solid material per cubic foot. In agronomy, the term is usually associated with machinery traffic across the soil during farming activities.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour. An imaginary line on the surface of the earth connecting points of the same elevation.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropland. Land used primarily for the production of adapted cultivated, close-growing crops, fruit, or nut crops for harvest, alone or in association with sod crops.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression. Any relatively sunken part of the earth's surface; especially a low-lying area surrounded by higher ground.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Dolostone. A term used for the sedimentary rock dolomite in order to avoid confusion with the mineral of the same name. A carbonate sedimentary rock consisting mostly (more than 50 percent by weight) of the mineral dolomite [$CaMg(CO_3)_2$].

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Effervescence. The gaseous response (observed as bubbles) of soil to applied hydrochloric acid (HCl) or other chemicals. A field or laboratory test to determine the presence of carbonates in the soil.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

End moraine. A moraine produced at the front of an actively flowing glacier at any given time.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Filtering capacity (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter the effluent in a waste disposal system.

Fine textured soil. Sandy clay, silty clay, or clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general

direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. Saturated hydraulic conductivity. See Permeability.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled in either by well sorted stratified sediments or by the reworking or existing sediments as a result of water action.

Lamella. An illuvial horizon less than 7.5 centimeters thick. Lamellae contain an accumulation of oriented silicate clay on or bridging sand and silt grains (and rock fragments, if they occur). A lamella has more silicate clay than the overlying eluvial horizon.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Limestone. A sedimentary rock composed of calcium carbonate. There are many impure varieties.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or

10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Lithic contact. A boundary between soil and continuous, coherent underlying material (commonly bedrock). The underlying material must be sufficiently coherent to make hand digging with a spade impractical.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Longshore bar. A narrow, elongate, coarse textured ridge that once rose near to or barely above a pluvial or glacial lake and extended generally parallel to the shore but was separated from it by an intervening trough or lagoon. Both the bar and the lagoon are now relict features.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh. A water-saturated, very poorly drained area, intermittently or permanently covered by water. Marsh areas dominantly support sedges, cattails, and rushes.

Masses. See Redoximorphic features.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water. A small manmade area used for industrial, sanitary, or mining applications that contains water most of the year.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates

less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mulch. Any material, such as straw, sawdust, leaves, plastic film, or loose soil, that is spread on the surface of the soil to protect the soil and plant roots from the effects of raindrops, surface crusting, freezing, and evaporation.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

No-till farming. A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth, which typically involves opening a small slit or punching a hole into the soil. Typically, no cultivation is done during crop production. Chemicals are commonly used for weed control.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or "washed out" from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paralithic contact. A boundary between soil and continuous, coherent underlying material (commonly bedrock). The underlying material is soft and can be dug with difficulty with a spade.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Pebbles. Rounded or partially rounded rock or mineral fragments between 2 and 75 millimeters and diameter.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to

100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Perennial water. Small natural or manmade lakes, ponds, or pits that contain water most of the year.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
    A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
    B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
    C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
    A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
    B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Reef. A ridgelike or moundlike structure, layered or massive, built by sedentary calcareous organisms. It is wave-resistant and stands above the surrounding contemporaneously deposited sediment.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Restricted permeability (in tables). The slow movement of water through the soil adversely affects the specified use.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Rise. A geomorphic component of flat plains (e.g., lake plain, low coastal plain, or low-gradient till plain) consisting of a slightly elevated but low, broad area with low slope gradients (i.e., slopes of 1 to 3 percent); typically a microfeature but can be fairly extensive. Commonly, soils on a rise are better drained than those in the surrounding flat area.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of base rock, typically hard rock, at the surface of the earth.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy spot. A small area of soil having a sandy surface layer (loamy sand or sand) in an area where the surrounding soil or soils have a loamy or clayey surface layer.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short steep slope. Typically, a narrow slope at least two slope classes steeper than the slope of the surrounding map units above or below it.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Gently sloping	1 to 4 percent or 2 to 6 percent
Strongly sloping	6 to 12 percent
Moderately steep	12 to 18 percent
Steep	18 to 25 percent

Slow refill (in tables). The slow filling of ponds, resulting from restricted water transmission in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot. An area in which 0.01 to 0.1 percent of the surface is covered with rock fragments more than 10 inches in diameter, within an area of surrounding soils in which less than 0.01 percent of the surface is covered with such fragments.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The loss of volume that occurs in muck when it oxidizes or dries.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Swamp. An area that is saturated with water throughout much of the year but in which the surface of the soil is generally not deeply submerged. The dominant vegetation in areas of swamp is trees and shrubs.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are

sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till. Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain. An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Typical pedon site. The site of the pedon described as typical for the series within the survey area.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot. An area of soil that is somewhat poorly drained to very poorly drained and that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Bowling Green, Ohio)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	31.5	16.4	24.0	59	-12	1	1.75	1.02	2.41	4	7.2
February---	35.5	19.4	27.5	63	-6	0	1.63	.67	2.44	4	5.3
March------	46.9	27.7	37.3	77	4	24	2.37	1.43	3.21	5	3.0
April------	59.4	37.1	48.3	83	18	94	3.21	1.90	4.37	7	.7
May--------	71.5	48.3	59.9	90	30	319	3.58	2.28	4.76	7	.0
June-------	81.0	58.2	69.6	96	40	587	3.56	2.02	4.93	6	.0
July-------	84.5	61.8	73.1	98	48	718	3.57	1.89	5.04	6	.0
August-----	82.0	59.4	70.7	94	44	638	3.36	1.58	4.89	6	.0
September--	75.8	52.0	63.9	92	34	421	2.63	1.36	3.75	5	.0
October----	63.5	41.2	52.4	84	23	148	2.53	1.27	3.62	5	.0
November---	49.2	32.0	40.6	73	14	29	2.64	1.33	3.78	6	.7
December---	36.8	22.1	29.5	63	-4	5	2.37	1.42	3.23	6	5.0
Yearly:											
Average---	59.8	39.6	49.7	---	---	---	---	---	---	---	---
Extreme---	104	-20	---	99	-14	---	---	---	---	---	---
Total-----	---	---	---	---	---	2,983	33.20	29.03	36.90	67	21.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Bowling Green, Ohio)

Probability	Temperature: 24 °F or lower	Temperature: 28 °F or lower	Temperature: 32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 16	Apr. 27	May 10
2 years in 10 later than--	Apr. 11	Apr. 23	May 5
5 years in 10 later than--	Apr. 2	Apr. 15	Apr. 27
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 20	Oct. 7	Sept. 29
2 years in 10 earlier than--	Oct. 27	Oct. 13	Oct. 4
5 years in 10 earlier than--	Nov. 9	Oct. 24	Oct. 14

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Bowling Green, Ohio)

Probability	Daily minimum temperature during growing season: Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	194	167	149
8 years in 10	203	176	156
5 years in 10	219	192	169
2 years in 10	236	208	182
1 year in 10	244	216	189

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AgA	Alvada loam, 0 to 1 percent slopes	512	0.1
AmA	Aurand fine sandy loam, 0 to 2 percent slopes	1,113	0.3
AnA	Aurand loam, 0 to 2 percent slopes	1,944	0.5
AsA	Aurand-Urban land complex, 0 to 2 percent slopes	205	*
BeB	Belmore sandy loam, 1 to 4 percent slopes	58	*
BfB	Belmore loam, 1 to 4 percent slopes	18	*
CaA	Castalia very cobbly loam, 0 to 2 percent slopes	205	*
CbB	Castalia-Marblehead complex, very stony, 0 to 6 percent slopes	3,047	0.8
CcA	Colwood fine sandy loam, 0 to 1 percent slopes	2,807	0.7
CdA	Colwood loam, 0 to 1 percent slopes	1,262	0.3
CtA	Colwood-Urban land complex, 0 to 1 percent slopes	107	*
CvA	Cygnet loam, 0 to 2 percent slopes	669	0.2
CxB	Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes	144	*
DgA	Digby sandy loam, 0 to 2 percent slopes	446	0.1
DhA	Digby loam, 0 to 2 percent slopes	166	*
DrA	Dunbridge sandy loam, 0 to 2 percent slopes	174	*
DsA	Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes	928	0.2
DsB	Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes	520	0.1
EaA	Eel loam, 0 to 2 percent slopes, frequently flooded	251	*
EmA	Eel silt loam, 0 to 2 percent slopes, frequently flooded	2,409	0.6
EnA	Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded	100	*
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded	129	*
FuA	Fulton silty clay loam, till substratum, 0 to 2 percent slopes	2,008	0.5
FuB	Fulton silty clay loam, till substratum, 2 to 6 percent slopes	303	*
FzA	Fulton, till substratum-Urban land complex, 0 to 2 percent slopes	1,630	0.4
GmA	Genesee loam, 0 to 2 percent slopes, frequently flooded	380	*
GnA	Genesee silt loam, 0 to 2 percent slopes, frequently flooded	824	0.2
GpA	Granby loamy fine sand, till substratum, 0 to 1 percent slopes	1,831	0.5
HaA	Haney sandy loam, 0 to 2 percent slopes	109	*
HaB	Haney sandy loam, 2 to 6 percent slopes	58	*
HdA	Haney loam, 0 to 2 percent slopes	26	*
HdB	Haney loam, 2 to 6 percent slopes	43	*
HeA	Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes	574	0.1
HeB	Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes	129	*
HfA	Haskins and Digby, till substratum, loams, 0 to 2 percent slopes	1,455	0.4
HfB	Haskins and Digby, till substratum, loams, 2 to 6 percent slopes	116	*
HgA	Hoytville clay loam, 0 to 1 percent slopes	178,784	45.0
HhA	Hoytville silty clay loam, 0 to 1 percent slopes	5	*
HvA	Hoytville silty clay, 0 to 1 percent slopes	54,295	13.7
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes	524	0.1
HyA	Hoytville-Urban land complex, 0 to 1 percent slopes	1,734	0.4
JoA	Joliet silty clay loam, 0 to 1 percent slopes	404	0.1
KeA	Kibbie loamy fine sand, 0 to 2 percent slopes	392	*
KfA	Kibbie fine sandy loam, 0 to 2 percent slopes	1,608	0.4
KfB	Kibbie fine sandy loam, 2 to 6 percent slopes	116	*
KkA	Kibbie-Urban land complex, 0 to 2 percent slopes	102	*
LbB	Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded	157	*
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes	10,140	2.6
LgA	Latty, till substratum-Urban land complex, 0 to 1 percent slopes	657	0.2
MbA	Millgrove loam, 0 to 1 percent slopes	103	*
McA	Mermill fine sandy loam, 0 to 1 percent slopes	388	*
MdA	Mermill loam, 0 to 1 percent slopes	1,637	0.4
MeA	Mermill sandy clay loam, 0 to 1 percent slopes	6,464	1.6
MfA	Mermill-Aurand complex, 0 to 1 percent slopes	26,435	6.7
MgA	Mermill-Urban land complex, 0 to 1 percent slopes	377	*
MhA	Millsdale silty clay loam, 0 to 1 percent slopes	3,690	0.9
MkA	Millsdale silty clay loam, stony, 0 to 1 percent slopes	172	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
MmA	Millsdale-Urban land complex, 0 to 1 percent slopes	122	*
MnA	Milton loam, 0 to 2 percent slopes	1,201	0.3
MnB	Milton loam, 2 to 6 percent slopes	164	*
NmA	Nappanee sandy loam, 0 to 2 percent slopes	1,213	0.3
NmB	Nappanee sandy loam, 2 to 6 percent slopes	138	*
NnA	Nappanee loam, 0 to 2 percent slopes	12,863	3.2
NnB	Nappanee loam, 2 to 6 percent slopes	998	0.3
NnB2	Nappanee loam, 2 to 6 percent slopes, eroded	395	*
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	3,413	0.9
NpB	Nappanee silty clay loam, 2 to 6 percent slopes	173	*
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded	138	*
NsA	Nappanee-Urban land complex, 0 to 2 percent slopes	148	*
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes	276	*
OtA	Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes	1,775	0.4
OtB	Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes	7,265	1.8
OzB	Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes	517	0.1
Pt	Pits, quarry	445	0.1
RbA	Randolph loam, 0 to 2 percent slopes	2,275	0.6
RbB	Randolph loam, 2 to 6 percent slopes	71	*
RdA	Randolph loam, stony, 0 to 2 percent slopes	138	*
ReA	Randolph-Urban land complex, 0 to 2 percent slopes	103	*
RfA	Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes	8,892	2.2
RfB	Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes	709	0.2
RgA	Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes	278	*
RhA	Ritchey loam, 0 to 2 percent slopes	539	0.1
RhB	Ritchey loam, 2 to 6 percent slopes	199	*
RkA	Ritchey loam, stony, 0 to 2 percent slopes	104	*
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes	221	*
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes	507	0.1
RsA	Rossburg silt loam, 0 to 2 percent slopes, frequently flooded	39	*
SdA	Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes	3,173	0.8
SdB	Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes	2,955	0.7
SeA	Shawtown loam, 0 to 2 percent slopes	4	*
SeB	Shawtown loam, 2 to 6 percent slopes	335	*
SgA	Shoals loam, 0 to 2 percent slopes, frequently flooded	293	*
ShA	Shoals silt loam, 0 to 2 percent slopes, frequently flooded	1,173	0.3
SkA	Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded	89	*
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded	69	*
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded	597	0.2
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	248	*
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded	3,768	0.9
SrB	Spinks fine sand, 2 to 6 percent slopes	439	0.1
SrC	Spinks fine sand, 6 to 12 percent slopes	193	*
SrD	Spinks fine sand, 12 to 18 percent slopes	52	*
SsB	Spinks loamy fine sand, 2 to 6 percent slopes	354	*
SsC	Spinks loamy fine sand, 6 to 12 percent slopes	135	*
StB	St. Clair loam, 2 to 6 percent slopes	209	*
StC2	St. Clair loam, 6 to 12 percent slopes, eroded	439	0.1
SuB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded	71	*
SuC2	St. Clair silty clay loam, 6 to 12 percent slopes, eroded	275	*
SuD2	St. Clair silty clay loam, 12 to 18 percent slopes, eroded	188	*
SuE2	St. Clair silty clay loam, 18 to 25 percent slopes, eroded	597	0.2
TeA	Tedrow loamy fine sand, 0 to 2 percent slopes	1,346	0.3
TeB	Tedrow loamy fine sand, 2 to 6 percent slopes	253	*
TfA	Tedrow-Urban land complex, 0 to 2 percent slopes	102	*
TpA	Toledo silty clay loam, 0 to 1 percent slopes	635	0.2
TuA	Toledo-Urban land complex, 0 to 1 percent slopes	946	0.2

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
UcA	Udorthents, loamy, 0 to 2 percent slopes	1,893	0.5
UcE	Udorthents, loamy, 2 to 25 percent slopes	1,119	0.3
Ur	Urban land	1,634	0.4
W	Water	2,827	0.7
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded	536	0.1
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes	216	*
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes	3,111	0.8
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes	6,469	1.6
WzA	Wauseon-Urban land complex, 0 to 1 percent slopes	162	*
	Total	397,108	100.0

* Less than 0.1 percent.

Table 5.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
AgA	Alvada loam, 0 to 1 percent slopes (where drained)
AmA	Aurand fine sandy loam, 0 to 2 percent slopes (where drained)
AnA	Aurand loam, 0 to 2 percent slopes (where drained)
BeB	Belmore sandy loam, 1 to 4 percent slopes
BfB	Belmore loam, 1 to 4 percent slopes
CcA	Colwood fine sandy loam, 0 to 1 percent slopes (where drained)
CdA	Colwood loam, 0 to 1 percent slopes (where drained)
CvA	Cygnet loam, 0 to 2 percent slopes
DgA	Digby sandy loam, 0 to 2 percent slopes (where drained)
DhA	Digby loam, 0 to 2 percent slopes (where drained)
DrA	Dunbridge sandy loam, 0 to 2 percent slopes
EaA	Eel loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
EmA	Eel silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
EnA	Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FuA	Fulton silty clay loam, till substratum, 0 to 2 percent slopes (where drained)
FuB	Fulton silty clay loam, till substratum, 2 to 6 percent slopes (where drained)
GmA	Genesee loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
GnA	Genesee silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
HaA	Haney sandy loam, 0 to 2 percent slopes
HaB	Haney sandy loam, 2 to 6 percent slopes
HdA	Haney loam, 0 to 2 percent slopes
HdB	Haney loam, 2 to 6 percent slopes
HeA	Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes (where drained)
HeB	Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes (where drained)
HfA	Haskins and Digby, till substratum, loams, 0 to 2 percent slopes (where drained)
HfB	Haskins and Digby, till substratum, loams, 2 to 6 percent slopes (where drained)
HgA	Hoytville clay loam, 0 to 1 percent slopes (where drained)
HhA	Hoytville silty clay loam, 0 to 1 percent slopes (where drained)
HvA	Hoytville silty clay, 0 to 1 percent slopes (where drained)
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes (where drained)
KeA	Kibbie loamy fine sand, 0 to 2 percent slopes (where drained)
KfA	Kibbie fine sandy loam, 0 to 2 percent slopes (where drained)
KfB	Kibbie fine sandy loam, 2 to 6 percent slopes (where drained)
LbB	Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes (where drained)
MbA	Millgrove loam, 0 to 1 percent slopes (where drained)
McA	Mermill fine sandy loam, 0 to 1 percent slopes (where drained)
MdA	Mermill loam, 0 to 1 percent slopes (where drained)
MeA	Mermill sandy clay loam, 0 to 1 percent slopes (where drained)
MfA	Mermill-Aurand complex, 0 to 1 percent slopes (where drained)
MhA	Millsdale silty clay loam, 0 to 1 percent slopes (where drained)
MnA	Milton loam, 0 to 2 percent slopes
MnB	Milton loam, 2 to 6 percent slopes
NmA	Nappanee sandy loam, 0 to 2 percent slopes (where drained)
NmB	Nappanee sandy loam, 2 to 6 percent slopes (where drained)
NnA	Nappanee loam, 0 to 2 percent slopes (where drained)
NnB	Nappanee loam, 2 to 6 percent slopes (where drained)
NnB2	Nappanee loam, 2 to 6 percent slopes, eroded (where drained)
NpA	Nappanee silty clay loam, 0 to 2 percent slopes (where drained)
NpB	Nappanee silty clay loam, 2 to 6 percent slopes (where drained)
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded (where drained)

Table 5.--Prime Farmland--Continued

Map symbol	Soil name
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
RbA	Randolph loam, 0 to 2 percent slopes (where drained)
RbB	Randolph loam, 2 to 6 percent slopes (where drained)
RfA	Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes (where drained)
RfB	Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes (where drained)
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes (where drained)
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes (where drained)
RsA	Rossburg silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
SeA	Shawtown loam, 0 to 2 percent slopes
SeB	Shawtown loam, 2 to 6 percent slopes
SgA	Shoals loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
ShA	Shoals silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
SkA	Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded (where drained)
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
StB	St. Clair loam, 2 to 6 percent slopes
SuB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
TpA	Toledo silty clay loam, 0 to 1 percent slopes (where drained)
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes (where drained)
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes (where drained)
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes (where drained)

Table 6.--Hydric Soils (Major Components)

(This table lists the map units that are made up dominantly of hydric soils. See text for a description of hydric properties)

Map symbol	Soil name
AgA	Alvada loam, 0 to 1 percent slopes
CcA	Colwood fine sandy loam, 0 to 1 percent slopes
CdA	Colwood loam, 0 to 1 percent slopes
CtA	Colwood-Urban land complex, 0 to 1 percent slopes
GpA	Granby loamy fine sand, till substratum, 0 to 1 percent slopes
HgA	Hoytville clay loam, 0 to 1 percent slopes
HhA	Hoytville silty clay loam, 0 to 1 percent slopes
HvA	Hoytville silty clay, 0 to 1 percent slopes
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes
HyA	Hoytville-Urban land complex, 0 to 1 percent slopes
JoA	Joliet silty clay loam, 0 to 1 percent slopes
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes
LgA	Latty, till substratum-Urban land complex, 0 to 1 percent slopes
MbA	Millgrove loam, 0 to 1 percent slopes
McA	Mermill fine sandy loam, 0 to 1 percent slopes
MdA	Mermill loam, 0 to 1 percent slopes
MeA	Mermill sandy clay loam, 0 to 1 percent slopes
MfA	Mermill-Aurand complex, 0 to 1 percent slopes
MgA	Mermill-Urban land complex, 0 to 1 percent slopes
MhA	Millsdale silty clay loam, 0 to 1 percent slopes
MkA	Millsdale silty clay loam, stony, 0 to 1 percent slopes
MmA	Millsdale-Urban land complex, 0 to 1 percent slopes
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded
TpA	Toledo silty clay loam, 0 to 1 percent slopes
TuA	Toledo-Urban land complex, 0 to 1 percent slopes
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes
WzA	Wauseon-Urban land complex, 0 to 1 percent slopes

Table 7.--Hydric Soils (Minor Components)

(This table lists map units that are dominantly nonhydric soils but that have minor components, or inclusions, that are hydric soils. See text for a description of hydric properties)

Map symbol and map unit name	Hydric component	Landform
AmA:		
Aurand fine sandy loam, 0 to 2 percent slopes	Mermill	depression, drainageway, lake plain
	Alvada	depression, drainageway, lake plain
AnA:		
Aurand loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
AsA:		
Aurand-Urban land complex, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
CvA:		
Cygnet loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
FcA:		
Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded	Sloan	backswamp, flood plain
FuA:		
Fulton silty clay loam, till substratum, 0 to 2 percent slopes	Latty	depression, drainageway, lake plain
FzA:		
Fulton, till substratum-Urban land complex, 0 to 2 percent slopes	Latty	depression, drainageway, lake plain
HeA:		
Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain

Table 7.--Hydric Soils (Minor Components)--Continued

Map symbol and map unit name	Hydric component	Landform
HfA:		
Haskins and Digby, till substratum, loams, 0 to 2 percent slopes	Mermill	depression, drainageway, lake plain
	Hoytville	depression, drainageway, lake plain
HfB:		
Haskins and Digby, till substratum, loams, 2 to 6 percent slopes	Mermill	depression, drainageway, lake plain
NnA:		
Nappanee loam, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
NnB:		
Nappanee loam, 2 to 6 percent slopes	Hoytville	depression, drainageway, lake plain
NpA:		
Nappanee silty clay loam, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
NsA:		
Nappanee-Urban land complex, 0 to 2 percent slopes	Hoytville	depression, drainageway, lake plain
RbA:		
Randolph loam, 0 to 2 percent slopes	Millsdale	depression, drainageway, lake plain
ReA:		
Randolph-Urban land complex, 0 to 2 percent slopes	Millsdale	depression, drainageway, lake plain
RfA:		
Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes	Wauseon	depression, drainageway, lake plain
RfB:		
Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes	Wauseon	depression, drainageway, lake plain
RgA:		
Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes	Wauseon	depression, drainageway, lake plain

Table 7.--Hydric Soils (Minor Components)--Continued

Map symbol and map unit name	Hydric component	Landform
SdA:		
Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes	Mermill	depression, drainageway, lake plain
	Wauseon	depression, drainageway, lake plain
	Hoytville	depression, drainageway, lake plain
SdB:		
Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes	Hoytville	depression, drainageway, lake plain
	Mermill	depression, drainageway, lake plain
	Wauseon	depression, drainageway, lake plain
SeA:		
Shawtown loam, 0 to 2 percent slopes	Alvada	depression, drainageway, lake plain
ShA:		
Shoals silt loam, 0 to 2 percent slopes, frequently flooded	Sloan	backswamp, depression, flood plain
SkA:		
Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded	Sloan	backswamp, depression, flood plain
TeA:		
Tedrow loamy fine sand, 0 to 2 percent slopes	Granby	depression, drainageway, lake plain
TfA:		
Tedrow-Urban land complex, 0 to 2 percent slopes	Granby	depression, drainageway, lake plain

Table 8.--Cropland Limitations and Hazards

(Only the soils that are suitable for cultivated crops are listed. See text for a description of the limitations and hazards listed in this table)

Map symbol and soil name	Cropland limitations and hazards
AgA:	
Alvada	Ponding, moderate potential for ground-water pollution, frost action
AmA:	
Aurand	Seasonal high water table, frost action, wind erosion
AnA:	
Aurand	Seasonal high water table, frost action
BeB:	
Belmore	High potential for ground-water pollution, erosion hazard, wind erosion
BfB:	
Belmore	High potential for ground-water pollution, erosion hazard
CcA:	
Colwood	Ponding, moderate potential for ground-water pollution, frost action, wind erosion
CdA:	
Colwood	Ponding, moderate potential for ground-water pollution, frost action
CvA:	
Cygnet	Seasonal high water table, frost action
DgA:	
Digby	Seasonal high water table, high potential for ground-water pollution, frost action, wind erosion
DhA:	
Digby	Seasonal high water table, high potential for ground-water pollution, frost action
DrA:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, wind erosion, limited available water capacity
DsA:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, wind erosion, limited available water capacity
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
DsB:	
Dunbridge	Depth to bedrock, high potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
EaA:	
Eel	Frequent flooding, moderate potential for ground-water pollution, frost action

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
EmA:	
Eel	Frequent flooding, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
EnA:	
Eel	Frequent flooding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting
FcA:	
Flatrock	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
FuA:	
Fulton	Seasonal high water table, surface compaction, frost action, fair tilth, surface crusting, clodding, high clay content
FuB:	
Fulton	Seasonal high water table, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, clodding, high clay content
GmA:	
Genesee	Frequent flooding
GnA:	
Genesee	Frequent flooding, surface compaction, surface crusting
GpA:	
Granby	Ponding, moderate potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
HaA:	
Haney	High potential for ground-water pollution, frost action, wind erosion
HaB:	
Haney	High potential for ground-water pollution, frost action, wind erosion
HdA:	
Haney	High potential for ground-water pollution, frost action
HdB:	
Haney	High potential for ground-water pollution, frost action
HeA:	
Haskins	Seasonal high water table, frost action, wind erosion
Digby	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability
HeB:	
Haskins	Seasonal high water table, frost action, wind erosion
Digby	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability
HfA:	
Haskins	Seasonal high water table, frost action
Digby	Seasonal high water table, frost action, restricted permeability

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
HfB:	
Haskins	Seasonal high water table, frost action
Digby	Seasonal high water table, frost action, restricted permeability
HgA:	
Hoytville	Ponding, surface compaction, frost action, fair tilth, clodding, high clay content
HhA:	
Hoytville	Ponding, surface compaction, frost action, fair tilth, clodding, high clay content
HvA:	
Hoytville	Ponding, surface compaction, poor tilth, frost action, clodding, high clay content
HwA:	
Hoytville	Ponding, surface compaction, poor tilth, frost action, limited available water capacity, clodding, high clay content
JoA:	
Joliet	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity
KeA:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
KfA:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
KfB:	
Kibbie	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion
LbB:	
Landes	Frequent flooding, high potential for ground-water pollution, erosion hazard, wind erosion
LdA:	
Latty	Ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, clodding, high clay content
MbA:	
Millgrove	Ponding, moderate potential for ground-water pollution, frost action
McA:	
Mermill	Ponding, frost action, wind erosion, restricted permeability
MdA:	
Mermill	Ponding, frost action, restricted permeability
MeA:	
Mermill	Ponding, frost action, restricted permeability
MfA:	
Mermill	Ponding, frost action, restricted permeability
Aurand	Seasonal high water table, frost action

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
MhA:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity, high clay content
MnA:	
Milton	Depth to bedrock, high potential for ground-water pollution, limited available water capacity, high clay content
MnB:	
Milton	Depth to bedrock, high potential for ground-water pollution, limited available water capacity, high clay content
NmA:	
Nappanee	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, high clay content
NmB:	
Nappanee	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, high clay content
NnA:	
Nappanee	Seasonal high water table, frost action, restricted permeability, high clay content
NnB:	
Nappanee	Seasonal high water table, frost action, restricted permeability, high clay content
NnB2:	
Nappanee	Part of the surface layer removed by erosion, seasonal high water table, frost action, fair tilth, restricted permeability, high clay content
NpA:	
Nappanee	Seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
NpB:	
Nappanee	Seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
NpB2:	
Nappanee	Part of the surface layer removed by erosion, seasonal high water table, surface compaction, poor tilth, frost action, surface crusting, restricted permeability, clodding, high clay content
OsB:	
Oshtemo	Erosion hazard, wind erosion
OtA:	
Ottokee	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
OtB:	
Ottokee	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
RbA:	
Randolph	Seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action, limited available water capacity
RbB:	
Randolph	Seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action, erosion hazard, limited available water capacity
RfA:	
Rimer	Seasonal high water table, frost action, wind erosion, limited available water capacity, restricted permeability, sandy layers
Tedrow	Seasonal high water table, wind erosion, limited available water capacity, restricted permeability, sandy layers
RfB:	
Rimer	Seasonal high water table, frost action, erosion hazard, wind erosion, limited available water capacity, restricted permeability, sandy layers
Tedrow	Seasonal high water table, erosion hazard, wind erosion, limited available water capacity, restricted permeability, sandy layers
RhA:	
Ritchey	Depth to bedrock, high potential for ground-water pollution, limited available water capacity
RhB:	
Ritchey	Depth to bedrock, high potential for ground-water pollution, erosion hazard, limited available water capacity
RmA:	
Risingsun	Ponding, moderate potential for ground-water pollution, frost action, subsidence of the muck, very high organic matter content, wind erosion
Rollersville	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion, limited available water capacity, sandy layers
RnA:	
Rollersville	Seasonal high water table, moderate potential for ground-water pollution, frost action, wind erosion, limited available water capacity, sandy layers
Risingsun	Ponding, moderate potential for ground-water pollution, frost action, subsidence of the muck, very high organic matter content, wind erosion
RsA:	
Rossburg	Frequent flooding, surface compaction, moderate potential for ground-water pollution

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
SdA:	
Seward	Wind erosion, limited available water capacity
Ottokee	Wind erosion, limited available water capacity, sandy layers
SdB:	
Seward	Erosion hazard, wind erosion, limited available water capacity
Ottokee	Erosion hazard, wind erosion, limited available water capacity, sandy layers
SeA:	
Shawtown	No limitations or hazards
SeB:	
Shawtown	Erosion hazard
SgA:	
Shoals	Frequent flooding, seasonal high water table, moderate potential for ground-water pollution, frost action
ShA:	
Shoals	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
SkA:	
Shoals	Frequent flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, surface crusting
SmA:	
Shoals	Frequent flooding, seasonal high water table, depth to bedrock, high potential for ground-water pollution, frost action
Sloan	Frequent flooding, ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity
SnA:	
Sloan	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action
SoA:	
Sloan	Occasional flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth
SpA:	
Sloan	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth
SrB:	
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
SrC:	
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
SsB:	
Spinks	High potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers

Table 8.--Cropland Limitations and Hazards--Continued

Map symbol and soil name	Cropland limitations and hazards
SsC:	
Spinks	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
StB:	
St. Clair	Erosion hazard, limited available water capacity, high clay content
StC2:	
St. Clair	Part of the surface layer removed by erosion, fair tilth, easily eroded, erosion hazard, limited available water capacity, high clay content
SuB2:	
St. Clair	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, limited available water capacity, clodding, high clay content
SuC2:	
St. Clair	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, clodding, high clay content
TeA:	
Tedrow	Seasonal high water table, high potential for ground-water pollution, wind erosion, limited available water capacity, sandy layers
TeB:	
Tedrow	Seasonal high water table, high potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity, sandy layers
TpA:	
Toledo	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, clodding, high clay content
WbA:	
Wabasha	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, clodding, high clay content
WmA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity, restricted permeability
WnA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity
WyA:	
Wauseon	Ponding, frost action, wind erosion, limited available water capacity, restricted permeability

Table 9.--Crop Yield Index

(This table is based on yields from the years 1992-2000. Only the soils that are suitable for cultivated crops are listed. Estimated yields for soils with a yield index of 100 are: corn--190 bushels; soybeans--60 bushels; and wheat--85 bushels. See text for more information on how this table was developed and instructions on converting yield index numbers to estimated yields. Absence of a yield index indicates that the soil is not suited to the crop or the crop is generally not grown on the soil)

Map symbol and soil name	Corn	Soybeans	Winter wheat
AgA: Alvada	89	93	88
AmA: Aurand	84	80	82
AnA: Aurand	87	83	91
BeB: Belmore	74	70	71
BfB: Belmore	76	73	76
CcA: Colwood	97	97	94
CdA: Colwood	100	100	100
CvA: Cygnet	82	82	81
DgA: Digby	74	77	71
DhA: Digby	76	80	76
DrA: Dunbridge	58	53	59
DsA: Dunbridge-Spinks	61	58	53
DsB: Dunbridge-Spinks	53	43	47
EaA: Eel	68	70	---
EmA: Eel	68	70	---
EnA: Eel	63	67	---
FcA: Flatrock	75	77	73

Table 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
FuA---------------------- Fulton	71	68	76
FuB---------------------- Fulton	68	63	65
GmA---------------------- Genesee	74	73	---
GnA---------------------- Genesee	74	73	---
GpA---------------------- Granby	63	67	76
HaA---------------------- Haney	79	80	80
HaB---------------------- Haney	76	75	76
HdA---------------------- Haney	82	83	82
HdB---------------------- Haney	79	78	78
HeA---------------------- Haskins and Digby	71	77	71
HeB---------------------- Haskins and Digby	68	73	68
HfA---------------------- Haskins and Digby	75	80	75
HfB---------------------- Haskins and Digby	72	75	71
HgA---------------------- Hoytville	88	87	85
HhA---------------------- Hoytville	88	87	85
HvA---------------------- Hoytville	85	87	85
HwA---------------------- Hoytville	79	80	78
JoA---------------------- Joliet	53	53	59
KeA---------------------- Kibbie	74	67	73
KfA---------------------- Kibbie	79	77	82
KfB---------------------- Kibbie	76	72	81

Table 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
LbB---------------------- Landes	66	63	---
LdA---------------------- Latty	71	67	68
MbA---------------------- Millgrove	92	97	89
McA---------------------- Mermill	87	80	85
MdA---------------------- Mermill	91	85	91
MeA---------------------- Mermill	89	83	88
MfA---------------------- Mermill-Aurand	89	83	91
MhA---------------------- Millsdale	75	77	73
MnA---------------------- Milton	63	63	65
MnB---------------------- Milton	58	58	61
NmA---------------------- Nappanee	71	73	81
NmB---------------------- Nappanee	63	67	73
NnA---------------------- Nappanee	75	75	79
NnB---------------------- Nappanee	65	67	73
NnB2--------------------- Nappanee	63	63	68
NpA---------------------- Nappanee	74	73	79
NpB---------------------- Nappanee	65	67	73
NpB2--------------------- Nappanee	62	60	65
OsB---------------------- Oshtemo	62	53	73
OtA---------------------- Ottokee-Spinks	61	60	65
OtB---------------------- Ottokee-Spinks	58	55	59

Table 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
RbA---------------------- Randolph	71	63	68
RbB---------------------- Randolph	68	57	65
RfA---------------------- Rimer and Tedrow	68	68	73
RfB---------------------- Rimer and Tedrow	66	63	68
RhA---------------------- Ritchey	55	57	61
RhB---------------------- Ritchey	53	50	59
RmA---------------------- Risingsun-Rollersville	76	77	---
RnA---------------------- Rollersville-Risingsun	78	80	---
RsA---------------------- Rossburg	78	77	---
SdA---------------------- Seward and Ottokee	65	67	68
SdB---------------------- Seward and Ottokee	63	60	65
SeA---------------------- Shawtown	82	77	78
SeB---------------------- Shawtown	75	68	73
SgA---------------------- Shoals	68	70	---
ShA---------------------- Shoals	68	70	---
SkA---------------------- Shoals	66	67	---
SmA---------------------- Shoals-Sloan	58	57	---
SnA---------------------- Sloan	68	73	---
SoA---------------------- Sloan	75	73	68
SpA---------------------- Sloan	68	73	---
SrB---------------------- Spinks	45	50	47

Table 9.--Crop Yield Index--Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
SrC---------------------- Spinks	39	40	35
SsB---------------------- Spinks	45	50	47
SsC---------------------- Spinks	39	40	35
StB---------------------- St. Clair	61	57	65
StC2--------------------- St. Clair	55	47	56
SuB2--------------------- St. Clair	58	50	59
SuC2--------------------- St. Clair	53	43	53
TeA---------------------- Tedrow	63	57	67
TeB---------------------- Tedrow	61	50	62
TpA---------------------- Toledo	78	77	78
WbA---------------------- Wabasha	66	67	---
WmA---------------------- Wauseon	78	73	78
WnA---------------------- Wauseon	82	75	80
WyA---------------------- Wauseon	83	80	82

Table 10.--Capability Classes and Subclasses

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
1	808	---	---	---
2	304,725	4,701	295,650	4,374
3	68,871	3,299	51,979	13,593
4	3,001	766	2,235	---
5	---	---	---	---
6	3,854	188	---	3,666
7	597	597	---	---

Table 11a.--Woodland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AmA:						
Aurand	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
AnA:						
Aurand	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
BfB:						
Belmore	Slight		Low		Severe	
	Water erosion	0.03			Low strength	1.00
CaA:						
Castalia	Slight		High		Slight	
	Water erosion	0.01	Carbonate content	1.00	Low strength	0.10
			Soil reaction	0.50		
CbB:						
Castalia	Slight		High		Slight	
	Water erosion	0.03	Carbonate content	1.00	Low strength	0.10
			Soil reaction	0.50		
Marblehead	Slight		Low		Severe	
	Water erosion	0.03			Low strength	1.00
CcA:						
Colwood	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
CdA:						
Colwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
CxB:						
Castalia------------	Not rated		Not rated		Not rated	
Marblehead----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
DhA:						
Digby---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
DrA:						
Dunbridge-----------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
DsA:						
Dunbridge-----------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
DsB:						
Dunbridge-----------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
EaA:						
Eel-----------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
EmA:						
Eel-----------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
EnA:						
Eel-----------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
FcA:						
Flatrock------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FuA:						
Fulton--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
FuB:						
Fulton--------------	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
FzA:						
Fulton--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
GmA:						
Genesee-------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
GnA:						
Genesee-------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
GpA:						
Granby--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HaA:						
Haney---------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
HaB:						
Haney---------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
HdA:						
Haney---------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
HdB:						
Haney---------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
HeA:						
Haskins-------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Digby---------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HeB:						
Haskins-------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Digby---------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
HfA:						
Haskins-------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Digby---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HfB:						
Haskins-------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Digby---------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
HgA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
HhA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HvA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HwA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HyA:						
Hoytville-----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
KeA:						
Kibbie--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KfA:						
Kibbie--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KfB:						
Kibbie--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
KkA:						
Kibbie--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes--------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
LdA:						
Latty---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
LgA:						
Latty---------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MbA:						
Millgrove-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
McA:						
Mermill-------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
MdA:						
Mermill-------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MeA:						
Mermill-------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
MfA:						
Mermill-------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Aurand--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MgA:						
Mermill-------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MhA:						
Millsdale-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MkA:						
Millsdale-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MmA:						
Millsdale-----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
MnB:						
Milton--------------	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
NmA:						
Nappanee------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
NmB:						
Nappanee------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
NnA:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
NnB:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NnB2:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
NpA:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
NpB:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NpB2:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
NsA:						
Nappanee------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
OsB:						
Oshtemo-------------	Slight		Low		Moderate	
	Water erosion	0.05			Low strength	0.50
OtA:						
Ottokee-------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
OtB:						
Ottokee-------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
OzB:						
Ottokee-------------	Not rated		Not rated		Not rated	
Spinks--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	
RbA:						
Randolph------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
RbB:						
Randolph------------	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
RdA:						
Randolph------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ReA:						
Randolph------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
RfA:						
Rimer---------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
Tedrow--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
RfB:						
Rimer---------------	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
Tedrow--------------	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
RgA:						
Rimer---------------	Not rated		Not rated		Not rated	
Tedrow--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RhB:						
Ritchey-------------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
RkA:						
Ritchey-------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RmA:						
Risingsun-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
			Carbonate content	0.50		
			Soil reaction	0.50		
Rollersville--------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
			Soil reaction	0.50		
RnA:						
Rollersville--------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
			Carbonate content	0.50		
			Soil reaction	0.50		
Risingsun-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
			Carbonate content	0.50		
RsA:						
Rossburg------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
SdA:						
Seward--------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
SdA:						
Ottokee-------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SdB:						
Seward--------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
Ottokee-------------	Slight		Low		Moderate	
	Water erosion	0.03			Low strength	0.50
SeA:						
Shawtown------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
SeB:						
Shawtown------------	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
SgA:						
Shoals--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ShA:						
Shoals--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SkA:						
Shoals--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SmA:						
Shoals--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Sloan---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SnA:						
Sloan---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SoA:						
Sloan---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SpA:						
Sloan---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SrB:						
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SrC:						
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.12			Low strength	0.50
SrD:						
Spinks--------------	Moderate		Low		Moderate	
	Water erosion	0.25			Low strength	0.50

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
SsB:						
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
SsC:						
Spinks--------------	Slight		Low		Moderate	
	Water erosion	0.12			Low strength	0.50
StB:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
StC2:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.20			Low strength	1.00
SuB2:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
SuC2:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.20			Low strength	1.00
SuD2:						
St. Clair-----------	Moderate		Low		Severe	
	Water erosion	0.34			Low strength	1.00
SuE2:						
St. Clair-----------	Moderate		Low		Severe	
	Water erosion	0.49			Low strength	1.00
TeA:						
Tedrow--------------	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
TeB:						
Tedrow--------------	Slight		High		Moderate	
	Water erosion	0.03	Wetness	1.00	Low strength	0.50
TfA:						
Tedrow--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
TuA:						
Toledo--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcE:						
Udorthents----------	Not rated		Not rated		Not rated	

Table 11a.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
WmA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WnA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WyA:						
Wauseon	Slight		High		Moderate	
	Water erosion	0.01	Wetness	1.00	Low strength	0.50
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 11b.--Woodland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
AmA:						
Aurand	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
AnA:						
Aurand	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Slight		Well suited		Well suited	
BfB:						
Belmore	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CaA:						
Castalia	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
CbB:						
Castalia	Severe		Moderately suited		Moderately suited	
	Stone content	1.00	Too sandy	0.50	Too sandy	0.50
	Too sandy	0.50	Large stones on the surface	0.50	Large stones on the surface	0.50
	Depth to bedrock	0.50				
Marblehead	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50	Large stones on the surface	0.50	Large stones on the surface	0.50
	Stone content	0.50				
CcA:						
Colwood	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CdA:						
Colwood	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
DgA:						
Digby	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
DhA:						
Digby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
DrA:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
DsA:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
Spinks	Slight		Well suited		Well suited	
DsB:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
Spinks	Slight		Well suited		Well suited	
EaA:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EmA:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
EnA:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Depth to bedrock	0.50	Depth to saturated zone	0.50		
FcA:						
Flatrock	Moderate		Moderately suited		Moderately suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
FuA:						
Fulton	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
FuB:						
Fulton	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GnA:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GpA:						
Granby	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
HaA:						
Haney	Slight		Well suited		Well suited	
HaB:						
Haney	Slight		Well suited		Well suited	

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
HdA:						
Haney---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
HdB:						
Haney---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
HeA:						
Haskins-------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Digby---------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
HeB:						
Haskins-------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Digby---------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
HfA:						
Haskins-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Digby---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HfB:						
Haskins-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Digby---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HgA:						
Hoytville-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
HhA:						
Hoytville-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
HvA:						
Hoytville-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Stickiness	0.50	Depth to saturated zone	1.00	Stickiness	0.50
			Low strength	0.50		
			Stickiness	0.50		
HwA:						
Hoytville-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Stickiness	0.50	Depth to saturated zone	1.00	Stickiness	0.50
			Low strength	0.50		
			Stickiness	0.50		
HyA:						
Hoytville-----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Severe		Poorly suited		Moderately suited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
KeA:						
Kibbie--------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KfA:						
Kibbie--------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KfB:						
Kibbie--------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
KkA:						
Kibbie--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes--------------	Severe		Poorly suited		Well suited	
	Flooding	1.00	Flooding	1.00		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
LdA:						
Latty	Moderate Low strength	 0.50	Poorly suited Ponding Depth to saturated zone Low strength	 1.00 1.00 0.50	Moderately suited Low strength	 0.50
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Moderate Low strength	 0.50	Poorly suited Ponding Depth to saturated zone Low strength	 1.00 1.00 0.50	Moderately suited Low strength	 0.50
McA:						
Mermill	Slight		Poorly suited Ponding Depth to saturated zone	 1.00 1.00	Well suited	
MdA:						
Mermill	Moderate Low strength	 0.50	Poorly suited Ponding Depth to saturated zone Low strength	 1.00 1.00 0.50	Moderately suited Low strength	 0.50
MeA:						
Mermill	Slight		Poorly suited Ponding Depth to saturated zone	 1.00 1.00	Well suited	
MfA:						
Mermill	Moderate Low strength	 0.50	Poorly suited Ponding Depth to saturated zone Low strength	 1.00 1.00 0.50	Moderately suited Low strength	 0.50
Aurand	Moderate Low strength	 0.50	Moderately suited Depth to saturated zone Low strength	 0.50 0.50	Moderately suited Low strength	 0.50
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MhA:						
Millsdale-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MkA:						
Millsdale-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MmA:						
Millsdale-----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MnB:						
Milton--------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
NmA:						
Nappanee------------	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
NmB:						
Nappanee------------	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
NnA:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NnB:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NnB2:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
NpA:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NpB:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NpB2:						
Nappanee------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
NsA:						
Nappanee------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
OsB:						
Oshtemo-------------	Slight		Well suited		Well suited	
OtA:						
Ottokee-------------	Slight		Well suited		Well suited	
Spinks--------------	Slight		Well suited		Well suited	
OtB:						
Ottokee-------------	Slight		Well suited		Well suited	
Spinks--------------	Slight		Well suited		Well suited	
OzB:						
Ottokee-------------	Not rated		Not rated		Not rated	
Spinks--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	
RbA:						
Randolph------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
RbB:						
Randolph------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:						
Randolph	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
RfB:						
Rimer	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
Tedrow	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RhB:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RkA:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
RmA:						
Risingsun	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RmA:						
Rollersville--------	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
RnA:						
Rollersville--------	Slight		Poorly suited		Well suited	
			Depth to saturated zone	1.00		
Risingsun-----------	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
RsA:						
Rossburg------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
SdA:						
Seward--------------	Slight		Well suited		Well suited	
Ottokee-------------	Slight		Well suited		Well suited	
SdB:						
Seward--------------	Slight		Well suited		Well suited	
Ottokee-------------	Slight		Well suited		Well suited	
SeA:						
Shawtown------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SeB:						
Shawtown------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SgA:						
Shoals--------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
ShA:						
Shoals--------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
SkA:						
Shoals--------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SmA:						
Shoals---------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
	Depth to bedrock	0.50	Low strength	0.50		
Sloan---------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
SnA:						
Sloan---------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SoA:						
Sloan---------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SpA:						
Sloan---------------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
SrB:						
Spinks--------------	Slight		Well suited		Well suited	
SrC:						
Spinks--------------	Slight		Moderately suited		Well suited	
			Slope	0.50		
SrD:						
Spinks--------------	Moderate		Poorly suited		Well suited	
	Slope	0.50	Slope	1.00		
SsB:						
Spinks--------------	Slight		Well suited		Well suited	
SsC:						
Spinks--------------	Slight		Moderately suited		Well suited	
			Slope	0.50		
StB:						
St. Clair-----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
StC2:						
St. Clair-----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
SuB2:						
St. Clair-----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SuC2:						
St. Clair-----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
SuD2:						
St. Clair-----------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Slope	1.00	Low strength	0.50
			Low strength	0.50		
SuE2:						
St. Clair-----------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
	Stickiness	0.50				
TeA:						
Tedrow--------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
TeB:						
Tedrow--------------	Slight		Moderately suited		Well suited	
			Depth to saturated zone	0.50		
TfA:						
Tedrow--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
TuA:						
Toledo--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcE:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	

Table 11b.--Woodland Management--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
WmA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WnA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WyA:						
Wauseon	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 11c.--Woodland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AmA:						
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AnA:						
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BfB:						
Belmore	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CaA:						
Castalia	Unsuited		Poorly suited		Low	
	Rock fragment content	0.92	Rock fragment content	0.50	Texture/rock fragments	0.30
CbB:						
Castalia	Unsuited		Poorly suited		Low	
	Rock fragment content	0.92	Rock fragment content	0.50	Texture/rock fragments	0.30
	Too sandy	0.50				
Marblehead	Moderately suited		Unsuited		Low	
	Rock fragment content	0.50	Depth to bedrock	1.00	Texture/rock fragments	0.01
			Rock fragment content	0.50		
CcA:						
Colwood	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CdA:						
Colwood	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Moderately suited		Well suited		Low	
	Rock fragment content	0.18			Texture/rock fragments	0.01
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
DgA:						
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
DhA:						
Digby	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
DrA:						
Dunbridge	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
DsA:						
Dunbridge	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
DsB:						
Dunbridge	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
EaA:						
Eel	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
EmA:						
Eel	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
EnA:						
Eel	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FcA:						
Flatrock	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FuA:						
Fulton	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
FuB:						
Fulton	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
GnA:						
Genesee	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
GpA:						
Granby	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
HaA:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HaB:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HdA:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HdB:						
Haney	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
HeA:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HeB:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HfA:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HfB:						
Haskins	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Digby	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
HgA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
HhA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
HvA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
HwA:						
Hoytville	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
JoA:						
Joliet	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.10				
KeA:						
Kibbie	Well suited		Well suited		High	
					Texture/rock fragments	1.00
KfA:						
Kibbie	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KfB:						
Kibbie	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
LbB:						
Landes	Well suited		Well suited		High	
					Texture/rock fragments	1.00
LdA:						
Latty	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
McA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MdA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MeA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.30

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
MfA:						
Mermill	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Aurand	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MgA:						
Mermill	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
MkA:						
Millsdale	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.50				
MmA:						
Millsdale	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
MnA:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MnB:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
NmA:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NmB:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NnA:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NnB:						
Nappanee	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
NnB2:						
Nappanee------------	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.01
NpA:						
Nappanee------------	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NpB:						
Nappanee------------	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NpB2:						
Nappanee------------	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
NsA:						
Nappanee------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
OsB:						
Oshtemo-------------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OtA:						
Ottokee-------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
Spinks--------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
OtB:						
Ottokee-------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
Spinks--------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
OzB:						
Ottokee-------------	Not rated		Not rated		Not rated	
Spinks--------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
RbA:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
RbB:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
RdA:						
Randolph	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.50				
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RfB:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.14			Texture/rock fragments	0.01
RhB:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.14			Texture/rock fragments	0.01
RkA:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/rock fragments	0.01

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
RmA:						
Risingsun-----------	Well suited		Well suited		Low	
Rollersville--------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RnA:						
Rollersville--------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Risingsun-----------	Well suited		Well suited		Low	
RsA:						
Rossburg------------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SdA:						
Seward--------------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Ottokee-------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SdB:						
Seward--------------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Ottokee-------------	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SeA:						
Shawtown------------	Moderately suited		Well suited		Low	
	Rock fragment content	0.18			Texture/rock fragments	0.01
SeB:						
Shawtown------------	Moderately suited		Well suited		Low	
	Rock fragment content	0.18			Texture/rock fragments	0.01
SgA:						
Shoals--------------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
ShA:						
Shoals--------------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SkA:						
Shoals--------------	Well suited		Well suited		Low	
					Texture/rock fragments	0.30

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
SmA:						
Shoals	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Sloan	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
SnA:						
Sloan	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SoA:						
Sloan	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
SpA:						
Sloan	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
SrB:						
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SrC:						
Spinks	Moderately suited		Well suited		High	
	Slope	0.50			Texture/rock fragments	1.00
SrD:						
Spinks	Poorly suited		Poorly suited		High	
	Slope	0.75	Slope	0.75	Texture/rock fragments	1.00
SsB:						
Spinks	Well suited		Well suited		High	
					Texture/rock fragments	1.00
SsC:						
Spinks	Moderately suited		Well suited		High	
	Slope	0.50			Texture/rock fragments	1.00
StB:						
St. Clair	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
StC2:						
St. Clair	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.01
	Slope	0.50				

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
SuB2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
SuC2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
	Slope	0.50				
SuD2:						
St. Clair	Moderately suited		Poorly suited		Moderate	
	Slope	0.50	Stickiness	0.50	Texture/rock fragments	0.70
	Stickiness	0.50				
SuE2:						
St. Clair	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.70
	Stickiness	0.50	Stickiness	0.50		
TeA:						
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
TeB:						
Tedrow	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Moderately suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30

Table 11c.--Woodland Management--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
WmA:						
Wauseon	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
WnA:						
Wauseon	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WyA:						
Wauseon	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 12.--Woodland Productivity

(See text for definitions of terms used in this table. Absence of an entry indicates that the soil is generally not used as woodland)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
AgA:				
Alvada	Eastern cottonwood	---	---	American sycamore, Austrian pine, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, shumard oak, swamp white oak
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	85	72	
AmA:				
Aurand	Northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
AnA:				
Aurand	Northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
AsA:				
Aurand	Northern red oak	80	57	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Urban land.				
BeB:				
Belmore	Black cherry	---	---	Black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
BfB:				
Belmore	Black cherry	---	---	Black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
CaA:				
Castalia	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black oak	50	29	
	Red maple	---	---	
	Scarlet oak	---	---	
	Tuliptree	---	---	
CbB:				
Castalia	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black oak	50	29	
	Red maple	---	---	
	Scarlet oak	---	---	
	Tuliptree	---	---	
Marblehead	Black cherry	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	Black oak	45	29	
	Red maple	---	---	
	Scarlet oak	---	---	
	Tuliptree	---	---	
CcA:				
Colwood	Pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Red maple	---	---	
	Swamp white oak	90	72	
	White ash	---	---	
CdA:				
Colwood	Pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Red maple	---	---	
	Swamp white oak	90	72	
	White ash	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CtA:				
Colwood	Pin oak	90	72	American sycamore, Norway spruce, Shumard's oak, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Red maple	---	---	
	Swamp white oak	90	72	
	White ash	---	---	
Urban land.				
CvA:				
Cygnet	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	
CxB:				
Castalia	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black oak	50	29	
	Red maple	---	---	
	Scarlet oak	---	---	
	Tuliptree	---	---	
Marblehead	Black cherry	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	Black oak	45	29	
	Red maple	---	---	
	Scarlet oak	---	---	
	Tuliptree	---	---	
Urban land.				
DgA:				
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
DhA:				
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
DrA:				
Dunbridge	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black walnut	---	---	
	Northern red oak	75	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	70	57	
DsA:				
Dunbridge	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black walnut	---	---	
	Northern red oak	75	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	70	57	
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
DsB:				
Dunbridge	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black walnut	---	---	
	Northern red oak	75	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	70	57	
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
EaA:				
Eel	Black cherry	---	---	Black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	---	---	
	Tuliptree	100	114	
	White ash	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
EmA:				
Eel	Black cherry	---	---	Black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	---	---	
	Tuliptree	100	114	
	White ash	---	---	
EnA:				
Eel	Black cherry	---	---	Black cherry, black locust, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	---	---	
	Tuliptree	100	114	
	White ash	---	---	
FcA:				
Flatrock	Black cherry	---	---	Black cherry, black walnut, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	---	---	
	White oak	---	---	
FuA:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Black cherry	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
FuB:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Black cherry	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
FzA:				
Fulton	American beech	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Black cherry	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
FzA:				
Urban land.				
GmA:				
Genesee	Black cherry	---	---	Black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Tuliptree	100	114	
	White ash	---	---	
	White oak	---	---	
GnA:				
Genesee	Black cherry	---	---	Black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Tuliptree	100	114	
	White ash	---	---	
	White oak	---	---	
GpA:				
Granby	Eastern cottonwood	---	---	Austrian pine, Norway spruce, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Green ash	---	---	
	Pin oak	70	57	
	Red maple	68	43	
	Swamp white oak	---	---	
HaA:				
Haney	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HaB:				
Haney	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HdA:				
Haney	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HdB:				
Haney	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black locust, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HeA:				
Haskins	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HeB:				
Haskins	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HfA:				
Haskins	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HfB:				
Haskins	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Digby	Black cherry	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HgA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	76	57	
	Red maple	---	---	
	Swamp white oak	---	---	
	White ash	77	43	
HhA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	76	57	
	Red maple	---	---	
	Swamp white oak	---	---	
	White ash	77	43	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HvA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	76	57	
	Red maple	---	---	
	Swamp white oak	---	---	
	White ash	77	43	
HwA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Black willow	---	---	
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	60	43	
	Red maple	---	---	
	Swamp white oak	---	---	
	White ash	---	---	
HyA:				
Hoytville	American sycamore	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	76	57	
	Red maple	---	---	
	Swamp white oak	---	---	
	White ash	77	43	
Urban land.				
JoA:				
Joliet	American basswood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Northern red oak	55	43	
	Pin oak	---	---	
	Quaking aspen	---	---	
	Swamp white oak	---	---	
KeA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	Northern red oak	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	White ash	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
KfA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	Northern red oak	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	White ash	---	---	
KfB:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	Northern red oak	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	White ash	---	---	
KkA:				
Kibbie	American basswood	---	---	American sycamore, black locust, bur oak, green ash, northern red oak, sugar maple, white ash, white oak
	Northern red oak	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	White ash	---	---	
Urban land.				
LbB:				
Landes	Black cherry	---	---	Black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
LdA:				
Latty	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	70	57	
	Red maple	---	---	
	Swamp white oak	70	57	
LgA:				
Latty	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	70	57	
	Red maple	---	---	
	Swamp white oak	70	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
LgA:				
Urban land.				
MbA:				
Millgrove	Eastern cottonwood	---	---	Austrian pine, Norway spruce, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	85	72	
McA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
MdA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
MeA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MfA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
Aurand	Northern red oak	80	57	American sycamore, black oak, bur oak, green ash, northern red oak, pin oak, sugar maple, tuliptree, white ash, white oak
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
MgA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
Urban land.				
MhA:				
Millsdale	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
MkA:				
Millsdale	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MmA:				
Millsdale	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
Urban land.				
MnA:				
Milton	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
MnB:				
Milton	Black cherry	---	---	Norway spruce, black cherry, black walnut, bur oak, eastern white pine, northern red oak, white ash, white oak
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
NmA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NmB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
NnA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NnB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NnB2:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NpA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NpB:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
NpB2:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NsA:				
Nappanee	American sycamore	---	---	American sycamore, Austrian pine, Shumard's oak, baldcypress, bur oak, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, swamp white oak
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
Urban land.				
OsB:				
Oshtemo	Black cherry	---	---	Black locust, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
OtA:				
Ottokee	Bur oak	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	White ash	---	---	
	White oak	65	43	
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
OtB:				
Ottokee	Bur oak	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	White ash	---	---	
	White oak	65	43	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
OtB:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
OzB:				
Ottokee	Bur oak	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	White ash	---	---	
	White oak	65	43	
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
Urban land.				
Pt. Pits, quarry				
RbA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	Northern red oak	75	57	
	Pin oak	---	---	
	Red maple	---	---	
	Sugar maple	90	57	
	Tuliptree	85	86	
RbB:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	Northern red oak	75	57	
	Pin oak	---	---	
	Red maple	---	---	
	Sugar maple	90	57	
	Tuliptree	85	86	
RdA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	Northern red oak	75	57	
	Pin oak	---	---	
	Red maple	---	---	
	Sugar maple	90	57	
	Tuliptree	85	86	
ReA:				
Randolph	American beech	---	---	Norway spruce, baldcypress, bur oak, northern red oak, pin oak, swamp white oak, tuliptree
	Northern red oak	75	57	
	Pin oak	---	---	
	Red maple	---	---	
	Sugar maple	90	57	
	Tuliptree	85	86	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ReA:				
Urban land.				
RfA:				
Rimer	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Red maple	---	---	
	White oak	75	57	
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
RfB:				
Rimer	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Red maple	---	---	
	White oak	75	57	
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
RgA:				
Rimer	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Red maple	---	---	
	White oak	75	57	
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
Urban land.				
RhA:				
Ritchey	Bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	Northern red oak	50	29	
	Sugar maple	---	---	
	White oak	50	29	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RhB:				
Ritchey	Bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	Northern red oak	50	29	
	Sugar maple	---	---	
	White oak	50	29	
RkA:				
Ritchey	Bur oak	---	---	Blue Ash, black oak, chinkapin oak, eastern redcedar, eastern white pine, hawthorn, white oak
	Northern red oak	50	29	
	Sugar maple	---	---	
	White oak	50	29	
RmA:				
Risingsun	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Pin oak	70	57	
	Quaking aspen	70	86	
	Red maple	68	43	
	Silver maple	82	29	
Rollersville	Eastern cottonwood	90	100	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	
RnA:				
Rollersville	Eastern cottonwood	90	100	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RnA:				
Risingsun	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Pin oak	70	57	
	Quaking aspen	70	86	
	Red maple	68	43	
	Silver maple	82	29	
RsA:				
Rossburg	Black cherry	---	---	Black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, sugar maple, tuliptree, white ash, white oak
	Black walnut	---	---	
	Northern red oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	
SdA:				
Seward	Black oak	---	---	Black cherry, black oak, black walnut, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Red maple	---	---	
	Tuliptree	95	100	
Ottokee	Bur oak	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	White ash	---	---	
	White oak	65	43	
SdB:				
Seward	Black oak	---	---	Black cherry, black oak, black walnut, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Red maple	---	---	
	Tuliptree	95	100	
Ottokee	Bur oak	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	White ash	---	---	
	White oak	65	43	
SeA:				
Shawtown	American basswood	66	57	Black locust, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	70	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
SeB:				
Shawtown	American basswood	66	57	Black locust, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	Northern red oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	70	57	
SgA:				
Shoals	Eastern cottonwood	---	---	Bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	Pin oak	90	72	
	Sweetgum	86	100	
	Tuliptree	90	86	
	White ash	---	---	
ShA:				
Shoals	Eastern cottonwood	---	---	Bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	Pin oak	90	72	
	Sweetgum	86	100	
	Tuliptree	90	86	
	White ash	---	---	
SkA:				
Shoals	Eastern cottonwood	---	---	Bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	Pin oak	90	72	
	Sweetgum	86	100	
	Tuliptree	90	86	
	White ash	---	---	
SmA:				
Shoals	Eastern cottonwood	---	---	Bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	Pin oak	90	72	
	Sweetgum	86	100	
	Tuliptree	90	86	
	White ash	---	---	
Sloan	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	85	72	
	Red maple	---	---	
	Swamp white oak	---	---	
SnA:				
Sloan	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	85	72	
	Red maple	---	---	
	Swamp white oak	---	---	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
SoA:				
Sloan	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
SpA:				
Sloan	Eastern cottonwood	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	85	72	
	Red maple	---	---	
	Swamp white oak	---	---	
SrB:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
SrC:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
SrD:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
SsB:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
SsC:				
Spinks	Black cherry	---	---	Black cherry, black oak, bur oak, chinkapin oak, eastern white pine, white ash, white oak
	Black oak	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	66	43	
StB:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
StC2:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
SuB2:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
SuC2:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
SuD2:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
SuE2:				
St. Clair	Northern red oak	66	43	American sycamore, Austrian pine, bur oak, eastern cottonwood, eastern white pine, green ash, pin oak, red maple, swamp white oak, tuliptree, white ash
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
TeA:				
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
TeB:				
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
TfA:				
Tedrow	Black oak	---	---	Black oak, bur oak, green ash, northern red oak, tuliptree, white ash, white oak
	Bur oak	75	57	
	Green ash	---	---	
	Northern red oak	---	---	
	Red maple	---	---	
Urban land.				
TpA:				
Toledo	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Swamp white oak	80	57	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
TuA:				
Toledo	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Swamp white oak	80	57	
Urban land.				
UcA, UcE. Udorthents				
Ur. Urban land				
W. Water				
WbA:				
Wabasha	Eastern cottonwood	---	---	American sycamore, Norway spruce, baldcypress, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum
	Green ash	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Swamp white oak	---	---	
WmA:				
Wauseon	Eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	
WnA:				
Wauseon	Eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	

Table 12.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WyA:				
Wauseon	Eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	
WzA:				
Wauseon	Eastern cottonwood	90	100	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, silver maple, swamp white oak, sweetgum, white ash
	Green ash	---	---	
	Pin oak	---	---	
	Red maple	---	---	
	Silver maple	70	29	
	Swamp white oak	90	72	
Urban land.				

Table 13.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
AgA: Alvada	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
AmA: Aurand	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
AnA: Aurand	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
AsA: Aurand	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Urban land.					
BeB: Belmore	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; Osageorange	White oak; white spruce	Eastern white pine; northern red oak; white ash
BfB: Belmore	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; Osageorange	White oak; white spruce	Eastern white pine; northern red oak; white ash

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
CaA:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
CbB:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
Marblehead	Redbud	Eastern redcedar; northern white-cedar; Washington hawthorn	Chinkapin oak	---	---
CcA:					
Colwood	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
CdA:					
Colwood	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
CtA:					
Colwood	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
CvA:					
Cygnet	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Arborvitae; baldcypress; blue spruce; eastern redcedar; white fir	Austrian pine; green ash; Norway spruce; pin oak	Eastern white pine

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
CxB:					
Castalia	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
Marblehead	Redbud	Eastern redcedar; northern white-cedar; Washington hawthorn	Chinkapin oak	---	---
Urban land.					
DgA:					
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
DhA:					
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
DrA:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
DsA:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
DsB:					
Dunbridge	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
DsB:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
EaA:					
Eel	Silky dogwood	American cranberrybush; blackhaw; eastern redcedar; European alder; southern arrowwood; Washington hawthorn	Blue spruce; northern white-cedar; Osageorange	Austrian pine; Norway spruce	Eastern white pine; pin oak
EmA:					
Eel	Silky dogwood	American cranberrybush; blackhaw; eastern redcedar; European alder; southern arrowwood; Washington hawthorn	Blue spruce; northern white-cedar; Osageorange	Austrian pine; Norway spruce	Eastern white pine; pin oak
EnA:					
Eel	Silky dogwood	American cranberrybush; blackhaw; eastern redcedar; European alder; southern arrowwood; Washington hawthorn	Blue spruce; northern white-cedar; Osageorange	Austrian pine; Norway spruce	Eastern white pine; pin oak
FcA:					
Flatrock	Silky dogwood	American cranberrybush; blackhaw; eastern redcedar; European alder; southern arrowwood; Washington hawthorn	Blue spruce; northern white-cedar; Osageorange	Austrian pine; Norway spruce	Eastern white pine; pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
FuA:					
Fulton	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
FuB:					
Fulton	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
FzA:					
Fulton	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
Urban land.					
GmA:					
Genesee	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; Osageorange; white fir	White oak; white spruce	Eastern white pine; northern red oak; white ash

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
GnA:					
Genesee	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; Osageorange; white fir	White oak; white spruce	Eastern white pine; northern red oak; white ash
GpA:					
Granby	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
HaA:					
Haney	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Baldcypress; blue spruce; eastern redcedar; northern white-cedar; Osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	Eastern white pine
HaB:					
Haney	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Baldcypress; blue spruce; eastern redcedar; northern white-cedar; Osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	Eastern white pine
HdA:					
Haney	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Baldcypress; blue spruce; eastern redcedar; northern white-cedar; Osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	Eastern white pine

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
HdB:					
Haney	Silky dogwood; silky dogwood	American cranberrybush; European alder; Washington hawthorn	Baldcypress; blue spruce; eastern redcedar; northern white-cedar; Osageorange; white fir	Austrian pine; green ash; Norway spruce; pin oak	Eastern white pine
HeA:					
Haskins	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
HeB:					
Haskins	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
HfA:					
Haskins	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
HfB:					
Haskins	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Digby	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
HgA:					
Hoytville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
HhA:					
Hoytville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
HvA:					
Hoytville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
HwA:					
Hoytville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
HyA:					
Hoytville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
JoA:					
Joliet	European alder; silky dogwood	Baldcypress; northern white-cedar	Green ash	---	---
KeA:					
Kibbie	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
KfA:					
Kibbie	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
KfB:					
Kibbie	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
KkA:					
Kibbie	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Urban land.					

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
LbB:					
Landes	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; Osageorange	Norway spruce; white oak; white spruce	Eastern white pine; northern red oak; white ash
LdA:					
Latty	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
LgA:					
Latty	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
MbA:					
Millgrove	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
McA:					
Mermill	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
MdA:					
Mermill	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MeA:					
Mermill	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
MfA:					
Mermill	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Aurand	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
MgA:					
Mermill	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
MhA:					
Millsdale	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
MkA:					
Millsdale	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MmA:					
Millsdale	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
MnA:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
MnB:					
Milton	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; Osageorange	---	---
NmA:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NmB:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NnA:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
NnB:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NnB2:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NpA:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NpB:					
Nappanee	Silky dogwood; southern arrowwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
NpB2:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
NsA:					
Nappanee	Silky dogwood; southern arrowwood	American cranberrybush; baldcypress; blackhaw; eastern redcedar; European alder; Washington hawthorn	Austrian pine; green ash; northern white-cedar; Norway spruce; Osageorange	Pin oak; Shumard's oak	Swamp white oak
Urban land.					
OsB:					
Oshtemo	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; Osageorange	White oak; white spruce	Eastern white pine; northern red oak; white ash
OtA:					
Ottokee	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
OtB:					
Ottokee	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
OzB:					
Ottokee	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Urban land.					

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
Pt. Pits, quarry					
RbA: Randolph	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
RbB: Randolph	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
RdA: Randolph	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
ReA: Randolph	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Urban land.					
RfA: Rimer	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Tedrow	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RfB:					
Rimer	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Tedrow	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
RgA:					
Rimer	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Tedrow	Silky dogwood	American cranberrybush; European alder; Washington hawthorn	Austrian pine; baldcypress; eastern redcedar; northern white-cedar	Norway spruce; pin oak	Green ash
Urban land.					
RhA:					
Ritchey	Redbud	Eastern redcedar; northern white-cedar; Washington hawthorn	Chinkapin oak	---	---
RhB:					
Ritchey	Redbud	Eastern redcedar; northern white-cedar; Washington hawthorn	Chinkapin oak	---	---
RkA:					
Ritchey	Redbud	Eastern redcedar; northern white-cedar; Washington hawthorn	Chinkapin oak	---	---

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RmA:					
Risingsun	Common ninebark; silky dogwood	Nannyberry	Black willow	---	---
Rollersville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
RnA:					
Rollersville	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Risingsun	Common ninebark; silky dogwood	Nannyberry	Black willow	---	---
RsA:					
Rossburg	Redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; eastern white pine; northern white-cedar; Norway spruce; Osageorange	Norway spruce; white oak; white spruce	Eastern white pine; northern red oak; white ash
SdA:					
Seward	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Ottokee	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
SdB:					
Seward	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
Ottokee	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
SeA:					
Shawtown	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; Osageorange	White oak; white spruce	Eastern white pine; northern red oak; white ash
SeB:					
Shawtown	Japanese tree lilac; redbud; Siberian peashrub	Eastern redcedar; European alder; radiant crabapple; Siberian crabapple; Washington hawthorn	Austrian pine; blue spruce; northern white-cedar; Norway spruce; Osageorange	White oak; white spruce	Eastern white pine; northern red oak; white ash
SgA:					
Shoals	Silky dogwood	American cranberrybush; baldcypress; European alder	Eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
ShA:					
Shoals	Silky dogwood	American cranberrybush; baldcypress; European alder	Eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
SkA:					
Shoals	Silky dogwood	American cranberrybush; baldcypress; European alder	Eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
SmA:					
Shoals	Silky dogwood	American cranberrybush; baldcypress; European alder	Eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Sloan	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
SnA:					
Sloan	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
SoA:					
Sloan	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
SpA:					
Sloan	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
SrB:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
SrC:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
SrD:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
SsB:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine
SsC:					
Spinks	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce	Eastern white pine

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
StB:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
StC2:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
SuB2:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
SuC2:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
SuD2:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
SuE2:					
St. Clair	American cranberrybush; blackhaw	Baldcypress; eastern redcedar; southern arrowwood; Washington hawthorn	Austrian pine; northern white-cedar; Osageorange	Black oak; green ash; Norway spruce; pin oak	Northern red oak
TeA:					
Tedrow	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	Eastern white pine
TeB:					
Tedrow	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	Eastern white pine

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
TfA:					
Tedrow	Redbud	American cranberrybush; Washington hawthorn	Blue spruce; northern white-cedar	Austrian pine; Norway spruce; pin oak	Eastern white pine
Urban land.					
TpA:					
Toledo	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
TuA:					
Toledo	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					
UcA, UcE. Udorthents					
Ur. Urban land					
W. Water					
WbA:					
Wabasha	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn; white fir	Norway spruce; swamp white oak	Pin oak
WmA:					
Wauseon	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak

Table 13.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
WnA:					
Wauseon	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
WyA:					
Wauseon	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
WzA:					
Wauseon	Silky dogwood	American cranberrybush; baldcypress; European alder	Austrian pine; eastern redcedar; green ash; northern white-cedar; Washington hawthorn	Norway spruce; swamp white oak	Pin oak
Urban land.					

Table 14a.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Not limited		Not limited		Somewhat limited	
					Slope	0.13
BfB:						
Belmore	Not limited		Not limited		Somewhat limited	
					Slope	0.13
CaA:						
Castalia	Somewhat limited		Somewhat limited		Very limited	
	Gravel content	0.59	Gravel content	0.59	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
	Too stony	0.01	Too stony	0.01	Too stony	0.01
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Content of large stones	1.00
	Gravel content	0.36	Gravel content	0.36	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Too stony	0.97
					Depth to bedrock	0.97
					Slope	0.13

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
CbB:						
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too stony	1.00	Too stony	1.00	Too stony	1.00
					Gravel content	0.61
					Slope	0.13
					Content of large stones	0.03
CcA:						
Colwood------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
CdA:						
Colwood------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
CtA:						
Colwood------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.76	Depth to saturated zone	1.00
					Gravel content	0.06
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Content of large stones	1.00
	Gravel content	0.36	Gravel content	0.36	Gravel content	1.00
	Content of large stones	0.14	Content of large stones	0.14	Too stony	1.00
					Depth to bedrock	0.97
					Slope	0.13
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too stony	1.00	Too stony	1.00	Too stony	1.00
					Gravel content	0.61
					Slope	0.13
					Content of large stones	0.03
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.06

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
DhA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.06
DrA:						
Dunbridge	Not limited		Not limited		Somewhat limited	
					Gravel content	
DsA:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Gravel content	0.04
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
DsB:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Depth to bedrock	0.86
					Too sandy	0.31
					Slope	0.13
					Gravel content	0.04
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
EaA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.80	Flooding	0.40	Depth to saturated zone	0.80
EmA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.80	Flooding	0.40	Depth to saturated zone	0.80
EnA:						
Eel	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.46	Flooding	1.00
	Depth to saturated zone	0.83	Flooding	0.40	Depth to saturated zone	0.83
FcA:						
Flatrock	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Depth to saturated zone	1.00			Flooding	0.60
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.50
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Too sandy	0.72	Too sandy	0.72	Too sandy	0.72
HaA:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HaB:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HdA:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HdB:						
Haney	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
HeA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
HeA:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
					Too sandy	0.01
HeB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Gravel content	0.06
					Too sandy	0.01
HfA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					Gravel content	0.06
HfB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					Gravel content	0.06
HgA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
HhA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
HvA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
HwA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted	0.96	Restricted	0.96	Restricted	0.96
	permeability		permeability		permeability	
HyA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
					Gravel content	0.04
KeA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Too sandy	0.76	Too sandy	0.76	Too sandy	0.76
KfA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
KfB:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
KkA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
LbB:						
Landes	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Too sandy	0.76	Flooding	1.00
	Too sandy	0.76	Flooding	0.40	Too sandy	0.76
					Slope	0.13
LdA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
LgA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Gravel content	0.06
McA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
MdA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MeA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.98	Restricted	0.98	Restricted	0.98
	permeability		permeability		permeability	
MfA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.98	Restricted	0.98	Restricted	0.98
	permeability		permeability		permeability	
Aurand--------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Restricted	0.43	Restricted	0.43	Restricted	0.43
	permeability		permeability		permeability	
MgA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.98	Restricted	0.98	Restricted	0.98
	permeability		permeability		permeability	
Urban land----------	Not rated		Not rated		Not rated	
MhA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
					Gravel content	0.06
MkA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
	Too stony	0.74	Too stony	0.74	Gravel content	0.06
					Too stony	0.74
MmA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Ponding	1.00	saturated zone		Ponding	1.00
	Restricted	0.21	Restricted	0.21	Restricted	0.21
	permeability		permeability		permeability	
					Gravel content	0.06
Urban land----------	Not rated		Not rated		Not rated	

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
MnA:						
Milton--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MnB:						
Milton--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
NmA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NmB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NnB2:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NpA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NpB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
NsA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
Urban land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
OtA:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
OtB:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
OzB:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
					Slope	0.13
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
RbB:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.29
					Restricted permeability	0.21
					Slope	0.13
RdA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Too stony	0.74	Too stony	0.74	Too stony	0.74
ReA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
RfB:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
					Slope	0.13
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
RgA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Urban land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
					Slope	0.13
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too stony	0.74	Too stony	0.74	Too stony	0.74
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Gravel content	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Gravel content	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
RsA:						
Rossburg	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SdA:						
Seward	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
SdB:						
Seward	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.66	Too sandy	0.66	Too sandy	0.66
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
SeA:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
SeB:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
SgA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
ShA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SkA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SmA:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
SmA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00			Flooding	0.60
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	1.00
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.99	Slope	0.99	Too sandy	1.00
SsB:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.86	Too sandy	0.86	Too sandy	0.86
SsC:						
Spinks	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.86	Too sandy	0.86	Slope	1.00
	Slope	0.01	Slope	0.01	Too sandy	0.01
StB:						
St. Clair	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
					Gravel content	0.04

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
StC2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.96
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
					Gravel content	0.04
SuB2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10
SuC2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.96
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
SuD2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Slope	0.88	Slope	0.88	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
SuE2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
TeA:						
Tedrow--------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
TeB:						
Tedrow--------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
					Slope	0.13
TfA:						
Tedrow--------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.31	Too sandy	0.31	Too sandy	0.31
Urban land----------	Not rated		Not rated		Not rated	

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
TpA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
TuA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Too clayey	1.00	Ponding	1.00
	Too clayey	1.00	Restricted permeability	0.96	Too clayey	1.00
	Restricted permeability	0.96	Flooding	0.40	Restricted permeability	0.96
WmA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.70	Too sandy	0.70	Too sandy	0.70
WnA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01

Table 14a.--Recreational Development--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
Urban land----------	Not rated		Not rated		Not rated	

Table 14b.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Paths and trails		Off-road motorcycle trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Not limited		Not limited		Not limited	
BfB:						
Belmore	Not limited		Not limited		Not limited	
CaA:						
Castalia	Somewhat limited		Somewhat limited		Very limited	
	Content of large stones	0.14	Content of large stones	0.14	Droughty	1.00
	Too stony	0.01	Too stony	0.01	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.99
					Gravel content	0.59
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Droughty	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Depth to bedrock	1.00
					Droughty	1.00
					Content of large stones	0.03

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
CcA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
CdA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
CtA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Droughty	1.00
	Content of large stones	0.14	Content of large stones	0.14	Content of large stones	1.00
					Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead----------	Very limited		Very limited		Very limited	
	Too stony	1.00	Too stony	1.00	Depth to bedrock	1.00
					Droughty	1.00
					Content of large stones	0.03
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DhA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DrA:						
Dunbridge-----------	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.42
					Droughty	0.15
DsA:						
Dunbridge-----------	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Depth to bedrock	0.86
					Droughty	0.44

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
DsA:						
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.29
DsB:						
Dunbridge	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Depth to bedrock	0.86
					Droughty	0.44
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.29
EaA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
EmA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
EnA:						
Eel	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
					Depth to bedrock	0.16
FcA:						
Flatrock	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Flooding	0.60
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
GnA:						
Genesee	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
GpA:						
Granby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too sandy	0.72			Droughty	0.07
HaA:						
Haney	Not limited		Not limited		Not limited	
HaB:						
Haney	Not limited		Not limited		Not limited	
HdA:						
Haney	Not limited		Not limited		Not limited	
HdB:						
Haney	Not limited		Not limited		Not limited	
HeA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.01				
HeB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.01				
HfA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HfB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
HgA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
HhA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
HvA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
HwA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
					Droughty	0.03
HyA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
					Droughty	0.85
KeA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.76				
KfA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
KkA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
LbB:						
Landes	Somewhat limited		Somewhat limited		Very limited	
	Too sandy	0.76	Too sandy	0.76	Flooding	1.00
	Flooding	0.40	Flooding	0.40		
LdA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
LgA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
McA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
MdA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
MgA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.29
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too stony	0.74	Too stony	0.01	Depth to bedrock	0.29
MmA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.29
Urban land	Not rated		Not rated		Not rated	
MnA:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.80
MnB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.80
NmA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NmB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
NnB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NsA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Not limited		Not limited		Not limited	
OtA:						
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.14
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.30
OtB:						
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.14
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.30
OzB:						
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.14
Spinks	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.30
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.29

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
RbB:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.29
RdA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too stony	0.74	Too stony	0.74	Depth to bedrock	0.29
ReA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.29
Urban land----------	Not rated		Not rated		Not rated	
RfA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.66			Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.31			Droughty	0.07
RfB:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.66			Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.31			Droughty	0.07
RgA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.66			Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.31			Droughty	0.07
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.31

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
RhB:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.31
RkA:						
Ritchey	Somewhat limited		Somewhat limited		Very limited	
	Too stony	0.74	Too stony	0.74	Depth to bedrock	1.00
					Droughty	0.31
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Risingsun	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
RsA:						
Rossburg	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
SdA:						
Seward	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.66			Depth to saturated zone	0.03
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.17
SdB:						
Seward	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.66			Depth to saturated zone	0.03
Ottokee	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.31			Droughty	0.17
SeA:						
Shawtown	Not limited		Not limited		Not limited	
SeB:						
Shawtown	Not limited		Not limited		Not limited	

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
SgA:						
Shoals--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
ShA:						
Shoals--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
SkA:						
Shoals--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
SmA:						
Shoals--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
					Depth to bedrock	0.35
Sloan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
					Depth to bedrock	0.90
SnA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
SoA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
					Flooding	0.60
SpA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
SrB:						
Spinks--------------	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Droughty	0.32
SrC:						
Spinks--------------	Very limited		Very limited		Somewhat limited	
	Too sandy	1.00	Too sandy	1.00	Droughty	0.32
					Slope	0.01

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
SrD:						
Spinks--------------	Very limited		Very limited		Very limited	
	Too sandy	1.00	Too sandy	1.00	Slope	1.00
	Slope	0.11			Droughty	0.32
SsB:						
Spinks--------------	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.32
SsC:						
Spinks--------------	Somewhat limited		Not limited		Somewhat limited	
	Too sandy	0.86			Droughty	0.32
					Slope	0.01
StB:						
St. Clair-----------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
StC2:						
St. Clair-----------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
					Slope	0.01
SuB2:						
St. Clair-----------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
SuC2:						
St. Clair-----------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
					Slope	0.01
SuD2:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	0.05			Depth to saturated zone	0.03
SuE2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.70			Depth to saturated zone	0.03
TeA:						
Tedrow--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07
TeB:						
Tedrow--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
TfA:						
Tedrow	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.31			Droughty	0.07
Urban land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
TuA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Too clayey	1.00	Too clayey	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Too clayey	1.00
WmA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too sandy	0.70			Droughty	0.05
WnA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too sandy	0.01				

Table 14b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too sandy	0.01				
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too sandy	0.01				
Urban land----------	Not rated		Not rated		Not rated	

Table 15.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AgA:										
Alvada	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
AmA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AnA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AsA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										
BeB:										
Belmore	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BfB:										
Belmore	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CaA:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
CbB:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
Marblehead	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
CcA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CdA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CtA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										
CvA:										
Cygnet	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CxB:										
Castalia	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
Marblehead	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Urban land.										

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
DgA:										
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
DhA:										
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
DrA:										
Dunbridge	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
DsA:										
Dunbridge	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
DsB:										
Dunbridge	Poor	Fair	Good	Fair	Fair	Very poor.	Poor	Fair	Fair	Very poor.
Spinks	Poor	Fair	Good	Fair	Fair	Very poor.	Poor	Fair	Fair	Very poor.
EaA:										
Eel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EmA:										
Eel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
EnA:										
Eel	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
FcA:										
Flatrock	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
FuA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
FuB:										
Fulton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FzA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										
GmA:										
Genesee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GnA:										
Genesee	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GpA:										
Granby	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
HaA:										
Haney	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
HaB:										
Haney	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HdA:										
Haney	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
HdB:										
Haney	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
HeB:										
Haskins	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Digby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HfA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Digby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
HfB:										
Haskins	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Digby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HgA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HhA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HvA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HwA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HyA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										
JoA:										
Joliet	Poor	Poor	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair.
KeA:										
Kibbie	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
KfA:										
Kibbie	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
KfB:										
Kibbie------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KkA:										
Kibbie------------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										
LbB:										
Landes------------	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
LdA:										
Latty-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LgA:										
Latty-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										
MbA:										
Millgrove---------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
McA:										
Mermill-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MdA:										
Mermill-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MeA:										
Mermill-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MfA:										
Mermill-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Aurand------------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MgA:										
Mermill-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										
MhA:										
Millsdale---------	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
MkA:										
Millsdale---------	Poor	Poor	Very poor.	Poor	Poor	Good	Poor	Poor	Poor	Fair.
MmA:										
Millsdale---------	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Urban land.										
MnA:										
Milton------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
MnB:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NmA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NmB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NnA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NnB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NnB2:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NpA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NpB:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NpB2:										
Nappanee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NsA:										
Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										
OsB:										
Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OtA:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
OtB:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
OzB:										
Ottokee	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
OzB:										
Spinks	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Urban land.										
Pt.										
Pits, quarry										
RbA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RbB:										
Randolph	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RdA:										
Randolph	Poor	Fair	Very poor.	Good	Good	Fair	Fair	Fair	Fair	Fair.
ReA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Fair.
Urban land.										
RfA:										
Rimer	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
RfB:										
Rimer	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Tedrow	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
RgA:										
Rimer	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land.										
RhA:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RhB:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RkA:										
Ritchey	Poor	Poor	Very poor.	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RmA:										
Risingsun	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Rollersville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
RnA:										
Rollersville------	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Risingsun---------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
RsA:										
Rossburg----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SdA:										
Seward------------	Poor	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
Ottokee-----------	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SdB:										
Seward------------	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Ottokee-----------	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SeA:										
Shawtown----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SeB:										
Shawtown----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SgA:										
Shoals------------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
ShA:										
Shoals------------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
SkA:										
Shoals------------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
SmA:										
Shoals------------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Sloan-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SnA:										
Sloan-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SoA:										
Sloan-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SpA:										
Sloan-------------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
SrB:										
Spinks------------	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SrC:										
Spinks------------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
SrD:										
Spinks	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
SsB:										
Spinks	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
SsC:										
Spinks	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
StB:										
St. Clair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
StC2:										
St. Clair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuB2:										
St. Clair	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SuC2:										
St. Clair	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SuD2:										
St. Clair	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SuE2:										
St. Clair	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
TeA:										
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
TeB:										
Tedrow	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
TfA:										
Tedrow	Poor	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Urban land.										
TpA:										
Toledo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
TuA:										
Toledo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										
UcA, UcE. Udorthents										
Ur. Urban land										

Table 15.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
W.										
Water										
WbA:										
Wabasha-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WmA:										
Wauseon-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WnA:										
Wauseon-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WyA:										
Wauseon-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WzA:										
Wauseon-----------	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land.										

Table 16a.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
AgA:				
Alvada	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AmA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AnA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
AsA:				
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
BeB:				
Belmore	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BfB:				
Belmore	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CaA:				
Castalia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CbB:				
Castalia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Marblehead	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CcA:				
Colwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
CdA:				
Colwood-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CtA:				
Colwood-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
CvA:				
Cygnet--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CxB:				
Castalia------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Marblehead----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
DgA:				
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DhA:				
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DrA:				
Dunbridge-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DsA:				
Dunbridge-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
DsB:				
Dunbridge-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
EaA:				
Eel-----------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EmA:				
Eel-----------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
EnA:				
Eel-----------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FcA:				
Flatrock------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FuA:				
Fulton--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FuB:				
Fulton--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FzA:				
Fulton--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
GmA:				
Genesee-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GnA:				
Genesee-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GpA:				
Granby--------------	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
HaA:				
Haney---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HaB:				
Haney---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
HdA:				
Haney---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HdB:				
Haney---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HeA:				
Haskins-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HeB:				
Haskins-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HfA:				
Haskins-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HfB:				
Haskins-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Digby---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HgA:				
Hoytville-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HhA:				
Hoytville-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HvA:				
Hoytville-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
HwA:				
Hoytville-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HyA:				
Hoytville-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
JoA:				
Joliet--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KeA:				
Kibbie--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KfA:				
Kibbie--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KfB:				
Kibbie--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KkA:				
Kibbie--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
LbB:				
Landes--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
LdA:				
Latty---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LgA:				
Latty---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
MbA:				
Millgrove-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
McA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MdA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MeA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MfA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Aurand	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MgA:				
Mermill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
MhA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MmA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
MnA:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NmA:				
Nappanee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
NmB:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnA:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnB:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NnB2:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpA:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpB:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NpB2:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
NsA:				
Nappanee------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land----------	Not rated		Not rated	
OsB:				
Oshtemo-------------	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
OtA:				
Ottokee-------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
OtB:				
Ottokee-------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
OtB:				
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
OzB:				
Ottokee	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Spinks	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Urban land	Not rated		Not rated	
Pt:				
Pits, quarry	Not rated		Not rated	
RbA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RbB:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RdA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
RfA:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RfB:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
RgA:				
Rimer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Tedrow	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
RhA:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhB:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RkA:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RmA:				
Risingsun	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rollersville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RnA:				
Rollersville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Risingsun	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RsA:				
Rossburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SdA:				
Seward	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ottokee	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
SdB:				
Seward	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ottokee	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.50
SeA:				
Shawtown	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SeB:				
Shawtown	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SgA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ShA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SkA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SmA:				
Shoals	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SnA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SoA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SpA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
SrB:				
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SrC:				
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SrD:				
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SsB:				
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SsC:				
Spinks--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
StB:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
StC2:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuB2:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuC2:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuD2:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SuE2:				
St. Clair-----------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TeA:				
Tedrow--------------	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
TeB:				
Tedrow	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
TfA:				
Tedrow	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
Urban land	Not rated		Not rated	
TpA:				
Toledo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TuA:				
Toledo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	
UcA, UcE:				
Udorthents	Not rated		Not rated	
Ur:				
Urban land	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WbA:				
Wabasha	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WmA:				
Wauseon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WnA:				
Wauseon	Poor		Fair	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.48
WyA:				
Wauseon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WzA:				
Wauseon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban land	Not rated		Not rated	

Table 16b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Fair		Poor		Poor	
	Carbonate content	0.80	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
AmA:						
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Rock fragments	0.88
					Hard to reclaim (dense layer)	0.99
AnA:						
Aurand	Fair		Poor		Poor	
	Carbonate content	0.84	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.22	Hard to reclaim (dense layer)	0.80
					Rock fragments	0.88
AsA:						
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Hard to reclaim (dense layer)	0.84
					Rock fragments	0.88
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.50
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
BfB:						
Belmore	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.50
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
CaA:						
Castalia	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
	Carbonate content	0.00	Stone content	0.01	Rock fragments	0.00
	Stone content	0.00	Cobble content	0.13	Depth to bedrock	0.01
	Depth to bedrock	0.01				
	Cobble content	0.78				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
CbB:						
Castalia------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Carbonate content	0.00	Cobble content	0.00	Depth to bedrock	0.03
	Stone content	0.00	Stone content	0.00		
	Depth to bedrock	0.03				
	Cobble content	0.44				
Marblehead----------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00			Rock fragments	0.50
CcA:						
Colwood-------------	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
CdA:						
Colwood-------------	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
CtA:						
Colwood-------------	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.78		
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Fair		Fair		Fair	
	Carbonate content	0.46	Depth to saturated zone	0.14	Rock fragments	0.12
	Low content of organic matter	0.88			Depth to saturated zone	0.14
					Hard to reclaim (dense layer)	0.54
CxB:						
Castalia------------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Rock fragments	0.00
	Carbonate content	0.00	Cobble content	0.00	Depth to bedrock	0.03
	Stone content	0.00	Stone content	0.00		
	Depth to bedrock	0.03				
	Cobble content	0.44				
Marblehead----------	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00			Rock fragments	0.50
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Rock fragments	0.97

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
DhA:						
Digby	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Rock fragments	0.97
DrA:						
Dunbridge	Fair		Poor		Fair	
	Droughty	0.06	Depth to bedrock	0.00	Depth to bedrock	0.14
	Low content of organic matter	0.12			Rock fragments	0.72
	Depth to bedrock	0.14				
DsA:						
Dunbridge	Poor		Poor		Fair	
	Wind erosion	0.00	Depth to bedrock	0.00	Depth to bedrock	0.14
	Droughty	0.00			Rock fragments	0.72
	Low content of organic matter	0.12				
	Depth to bedrock	0.14				
Spinks	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to bedrock	0.68	Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.35				
DsB:						
Dunbridge	Poor		Poor		Fair	
	Wind erosion	0.00	Depth to bedrock	0.00	Depth to bedrock	0.14
	Droughty	0.00			Rock fragments	0.72
	Low content of organic matter	0.12				
	Depth to bedrock	0.14				
Spinks	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to bedrock	0.68	Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.35				
EaA:						
Eel	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to saturated zone	0.32
			Low strength	0.78		
EmA:						
Eel	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to saturated zone	0.32
			Low strength	0.78		

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
EnA:						
Eel	Fair		Poor		Fair	
	Depth to bedrock	0.84	Depth to bedrock	0.00	Depth to saturated zone	0.32
	Low content of organic matter	0.88	Depth to saturated zone	0.32	Depth to bedrock	0.84
			Low strength	0.78		
FcA:						
Flatrock	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.14
	Water erosion	0.99	Depth to saturated zone	0.14		
FuA:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.90				
FuB:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.90				
FzA:						
Fulton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.68	Shrink-swell	0.87		
	Water erosion	0.90				
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Fair		Fair		Good	
	Low content of organic matter	0.88	Low strength	0.78		
	Water erosion	0.99				
GnA:						
Genesee	Fair		Fair		Good	
	Low content of organic matter	0.88	Low strength	0.78		
	Water erosion	0.99				
GpA:						
Granby	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.02			Too sandy	0.02
	Carbonate content	0.80			Hard to reclaim (dense layer)	0.80
	Low content of organic matter	0.88				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
HaA:						
Haney---------------	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HaB:						
Haney---------------	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HdA:						
Haney---------------	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HdB:						
Haney---------------	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.92			Hard to reclaim (rock fragments)	0.92
					Depth to saturated zone	0.98
HeA:						
Haskins-------------	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.88
Digby---------------	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
	Droughty	0.99			Hard to reclaim (dense layer)	0.97
HeB:						
Haskins-------------	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.88
Digby---------------	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
	Droughty	0.99			Hard to reclaim (dense layer)	0.97

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
HfA:						
Haskins	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.74			Rock fragments	0.88
	Water erosion	0.99				
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
					Hard to reclaim (dense layer)	0.97
HfB:						
Haskins	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.74			Rock fragments	0.88
	Water erosion	0.99				
Digby	Fair		Poor		Poor	
	Carbonate content	0.74	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88			Rock fragments	0.97
					Hard to reclaim (dense layer)	0.97
HgA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80			Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
			Shrink-swell	0.87		
HhA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80			Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
			Shrink-swell	0.87		
HvA:						
Hoytville	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80			Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
			Shrink-swell	0.87		
HwA:						
Hoytville	Fair		Poor		Poor	
	Too clayey	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.32				
	Carbonate content	0.80	Low strength	0.00	Too clayey	0.09
	Low content of organic matter	0.88	Shrink-swell	0.87	Carbonate content	0.80

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
HyA:						
Hoytville-----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Droughty	0.00	Depth to saturated zone	0.00	Depth to bedrock	0.00
	Too clayey	0.68	Low strength	0.00	Too clayey	0.64
	Water erosion	0.99	Shrink-swell	0.87	Rock fragments	0.97
KeA:						
Kibbie--------------	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12				
	Carbonate content	0.80				
KfA:						
Kibbie--------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
KfB:						
Kibbie--------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
KkA:						
Kibbie--------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80				
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes--------------	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
LdA:						
Latty---------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
LgA:						
Latty	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80	Shrink-swell	0.87		
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92			Rock fragments	0.50
					Hard to reclaim (rock fragments)	0.98
McA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.78		
MdA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Low strength	0.00		
			Shrink-swell	0.99		
MeA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.78		
MfA:						
Mermill	Fair		Poor		Poor	
	Carbonate content	0.84	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
Aurand	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Depth to saturated zone	0.00	Hard to reclaim (dense layer)	0.46
					Rock fragments	0.97
MgA:						
Mermill	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84	Low strength	0.00		
Urban land	Not rated		Not rated		Not rated	

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
MhA:						
Millsdale-----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97
MkA:						
Millsdale-----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97
MmA:						
Millsdale-----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.71	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.76	Low strength	0.00	Depth to bedrock	0.71
			Shrink-swell	0.87	Rock fragments	0.97
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to bedrock	0.21
	Depth to bedrock	0.21	Shrink-swell	0.91		
	Droughty	0.36				
	Water erosion	0.99				
MnB:						
Milton--------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to bedrock	0.21
	Depth to bedrock	0.21	Shrink-swell	0.91		
	Droughty	0.36				
	Water erosion	0.99				
NmA:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Droughty	0.97				
	Water erosion	0.99				
NmB:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Droughty	0.97				
	Water erosion	0.99				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
NnA:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NnB:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NnB2:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Water erosion	0.99				
NpA:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
NpB:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
NpB2:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
NsA:						
Nappanee------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim (dense layer)	0.35
	Carbonate content	0.92				
Urban land----------	Not rated		Not rated		Not rated	

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
OsB:						
Oshtemo	Fair		Good		Fair	
	Low content of organic matter	0.12			Rock fragments	0.28
	Carbonate content	0.74			Hard to reclaim (dense layer)	0.84
OtA:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
OtB:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
OzB:						
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Low content of organic matter	0.50			Depth to saturated zone	0.91
	Too sandy	0.51				
	Droughty	0.68				
Spinks	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.62				
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry	Not rated		Not rated		Not rated	

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
RbA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
RbB:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
RdA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
ReA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.01	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.00
	Depth to bedrock	0.71	Low strength	0.00	Depth to bedrock	0.71
	Droughty	0.91	Shrink-swell	0.87	Rock fragments	0.97
	Water erosion	0.99				
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
RfB:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				
RgA:						
Rimer	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.16
	Too sandy	0.16	Shrink-swell	0.99	Hard to reclaim (dense layer)	0.29
	Droughty	0.73				
	Carbonate content	0.92				
Tedrow	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Too sandy	0.00
	Wind erosion	0.00	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12			Hard to reclaim (dense layer)	0.84
	Droughty	0.91				
	Carbonate content	0.92				
Urban land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RhB:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RkA:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.02	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
RmA:						
Risingsun-----------	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.04	Low strength	0.00	Too sandy	0.04
	Low content of organic matter	0.50			Hard to reclaim (dense layer)	0.20
	Carbonate content	0.80			Carbonate content	0.92
Rollersville--------	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.50	Low strength	0.00	Too sandy	0.00
	Droughty	0.72			Hard to reclaim (dense layer)	0.20
	Carbonate content	0.84			Carbonate content	0.92
RnA:						
Rollersville--------	Poor		Poor		Poor	
	Too sandy	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.84			Too sandy	0.00
	Droughty	0.94			Carbonate content	0.92
					Hard to reclaim (dense layer)	0.99
Risingsun-----------	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.04	Low strength	0.00	Too sandy	0.04
	Low content of organic matter	0.50			Hard to reclaim (dense layer)	0.29
	Carbonate content	0.80			Carbonate content	0.92
RsA:						
Rossburg------------	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.99				
SdA:						
Seward--------------	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.76	Too sandy	0.07
	Too sandy	0.07			Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Carbonate content	0.92				
	Droughty	0.99				
Ottokee-------------	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Droughty	0.46			Depth to saturated zone	0.91
	Low content of organic matter	0.50				
	Too sandy	0.51				
	Carbonate content	0.92				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
SdB:						
Seward	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.76	Too sandy	0.07
	Too sandy	0.07			Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Carbonate content	0.92				
	Droughty	0.99				
Ottokee	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.91	Too sandy	0.51
	Droughty	0.46			Depth to saturated zone	0.91
	Low content of organic matter	0.50				
	Too sandy	0.51				
	Carbonate content	0.92				
SeA:						
Shawtown	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.80			Depth to saturated zone	0.98
SeB:						
Shawtown	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.98	Rock fragments	0.28
	Carbonate content	0.80			Depth to saturated zone	0.98
SgA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
ShA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
SkA:						
Shoals	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.99				
SmA:						
Shoals	Fair		Poor		Fair	
	Depth to bedrock	0.65	Depth to bedrock	0.00	Depth to saturated zone	0.04
			Low strength	0.00	Depth to bedrock	0.65
			Depth to saturated zone	0.04		
Sloan	Fair		Poor		Poor	
	Depth to bedrock	0.10	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Droughty	0.47	Depth to saturated zone	0.00	Depth to bedrock	0.10
	Low content of organic matter	0.88	Low strength	0.00		

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
SnA:						
Sloan---------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92				
SoA:						
Sloan---------------	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Low strength	0.00		
SpA:						
Sloan---------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92				
SrB:						
Spinks--------------	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SrC:						
Spinks--------------	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SrD:						
Spinks--------------	Poor		Good		Poor	
	Wind erosion	0.00			Slope	0.00
	Too sandy	0.03			Too sandy	0.03
	Low content of organic matter	0.12				
	Droughty	0.50				
SsB:						
Spinks--------------	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				
SsC:						
Spinks--------------	Poor		Good		Fair	
	Wind erosion	0.00			Too sandy	0.03
	Too sandy	0.03				
	Low content of organic matter	0.12				
	Droughty	0.50				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
StB:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.99			Rock fragments	0.97
	Droughty	0.99				
StC2:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.99			Rock fragments	0.97
	Droughty	0.99				
SuB2:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.90			Rock fragments	0.97
	Droughty	0.98				
SuC2:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Carbonate content	0.80	Shrink-swell	0.87	Carbonate content	0.80
	Water erosion	0.90			Rock fragments	0.97
	Droughty	0.98				
SuD2:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.76	Slope	0.04
	Carbonate content	0.80	Shrink-swell	0.87	Depth to saturated zone	0.76
	Water erosion	0.90			Carbonate content	0.80
	Droughty	0.98			Rock fragments	0.97
SuE2:						
St. Clair-----------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.50	Too clayey	0.00
	Carbonate content	0.80	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Water erosion	0.90	Shrink-swell	0.87	Carbonate content	0.80
	Droughty	0.98			Rock fragments	0.97
TeA:						
Tedrow--------------	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
TeB:						
Tedrow	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				
TfA:						
Tedrow	Poor		Fair		Fair	
	Wind erosion	0.00	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Low content of organic matter	0.12			Too sandy	0.36
	Too sandy	0.36				
	Droughty	0.84				
Urban land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
TuA:						
Toledo	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
Urban land	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87		
WmA:						
Wauseon	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too sandy	0.18
	Too sandy	0.18			Hard to reclaim (dense layer)	0.54
	Droughty	0.42				
	Carbonate content	0.80				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
WnA:						
Wauseon-------------	Fair		Poor		Poor	
	Too sandy	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.50			Too sandy	0.18
	Carbonate content	0.80				
	Droughty	0.99				
WyA:						
Wauseon-------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.18	Low strength	0.00	Too sandy	0.18
	Droughty	0.69			Hard to reclaim (dense layer)	0.54
	Carbonate content	0.80				
WzA:						
Wauseon-------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.18	Low strength	0.00	Too sandy	0.18
	Droughty	0.69			Hard to reclaim (dense layer)	0.54
	Carbonate content	0.80				
Urban land----------	Not rated		Not rated		Not rated	

Table 17a.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited Ponding Depth to saturated zone	 1.00 1.00	Very limited Ponding Depth to saturated zone	 1.00 1.00	Very limited Ponding Depth to saturated zone	 1.00 1.00
AmA:						
Aurand	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone Shrink-swell	 1.00 0.50	Very limited Depth to saturated zone	 1.00
AnA:						
Aurand	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00
AsA:						
Aurand	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone Shrink-swell	 1.00 0.50	Very limited Depth to saturated zone	 1.00
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Not limited		Somewhat limited Depth to saturated zone	 0.95	Not limited	
BfB:						
Belmore	Not limited		Somewhat limited Depth to saturated zone	 0.95	Not limited	
CaA:						
Castalia	Somewhat limited Content of large stones Depth to bedrock	 1.00 0.99	Very limited Depth to bedrock Content of large stones	 1.00 1.00	Somewhat limited Content of large stones Depth to bedrock	 1.00 0.99
CbB:						
Castalia	Very limited Content of large stones Depth to bedrock	 1.00 0.97	Very limited Depth to bedrock Content of large stones	 1.00 1.00	Very limited Content of large stones Depth to bedrock	 1.00 0.97
Marblehead	Very limited Depth to bedrock	 1.00	Very limited Depth to bedrock	 1.00	Very limited Depth to bedrock	 1.00
CcA:						
Colwood	Very limited Ponding Depth to saturated zone	 1.00 1.00	Very limited Ponding Depth to saturated zone	 1.00 1.00	Very limited Ponding Depth to saturated zone	 1.00 1.00

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CdA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Content of large stones	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Depth to bedrock	0.97
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DhA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DrA:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
DsA:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
Spinks--------------	Not limited		Somewhat limited		Not limited	
			Depth to bedrock	0.32		
DsB:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
Spinks--------------	Not limited		Somewhat limited		Not limited	
			Depth to bedrock	0.32		

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
EaA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
EmA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
EnA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.80	Depth to saturated zone	1.00	Depth to saturated zone	0.80
	Depth to bedrock	0.15	Depth to bedrock	1.00	Depth to bedrock	0.135
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GnA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HaA:						
Haney---------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
HaB:						
Haney---------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
HdA:						
Haney---------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
HdB:						
Haney---------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
HeA:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HeB:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HfA:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HfB:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
HgA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
HhA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
HvA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
HwA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
HyA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
KeA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KkA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
LdA:						
Latty---------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
LgA:						
Latty---------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land----------	Not rated		Not rated		Not rated	
MbA:						
Millgrove-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
McA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MdA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
MeA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MfA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Aurand--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MgA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Urban land----------	Not rated		Not rated		Not rated	
MhA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
MkA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
MmA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.79	Depth to bedrock	1.00	Depth to bedrock	0.79
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MnB:						
Milton--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.79	Depth to bedrock	1.00	Depth to bedrock	0.79
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NmA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NmB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NnA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NnB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NsA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.24	Slope	0.10
OtA:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
Spinks	Not limited		Not limited		Not limited	
OtB:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
Spinks	Not limited		Not limited		Not limited	
OzB:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
OzB:						
Spinks--------------	Not limited		Not limited		Not limited	
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	
RbA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
RbB:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
RdA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
ReA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.29	Shrink-swell	0.50	Depth to bedrock	0.29
Urban land----------	Not rated		Not rated		Not rated	
RfA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
RfB:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
RgA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RhB:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RkA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RmA:						
Risingsun-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.44		
Rollersville--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.44		
RnA:						
Rollersville--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Risingsun-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.44		
RsA:						
Rossburg------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SdA:						
Seward--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SdA:						
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
SdB:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
Ottokee	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
SeA:						
Shawtown	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
SeB:						
Shawtown	Not limited		Somewhat limited		Somewhat limited	
			Depth to saturated zone	0.99	Slope	0.10
SgA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SkA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	0.35	Depth to bedrock	1.00	Depth to bedrock	0.35
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	0.90	Depth to bedrock	1.00	Depth to bedrock	0.90
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
SrB:						
Spinks	Not limited		Not limited		Not limited	
SrC:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.99
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
SsB:						
Spinks	Not limited		Not limited		Not limited	
SsC:						
Spinks	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.99
StB:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
StC2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	0.99
	Depth to saturated zone	0.10	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10
SuB2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
SuC2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	0.99
	Depth to saturated zone	0.10	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.10

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SuD2:						
St. Clair-----------	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	0.96	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
SuE2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
TeA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TeB:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TfA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
TuA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land----------	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	

Table 17a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
WbA:						
Wabasha-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WmA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
WnA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
Urban land----------	Not rated		Not rated		Not rated	

Table 17b.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.05				
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.95		
BfB:						
Belmore	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.95		
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00
	Depth to bedrock	0.99	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.99
					Gravel content	0.59

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CbB:						
Castalia------------	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Frost action	0.50			Droughty	1.00
					Content of large stones	0.03
CcA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.28				
CdA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.28				
CtA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.28				
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to saturated zone	1.00		
			Depth to dense layer	0.50		
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Depth to bedrock	1.00	Droughty	1.00
	Depth to bedrock	0.97	Content of large stones	1.00	Content of large stones	1.00
	Frost action	0.50			Carbonate content	1.00
					Depth to bedrock	0.97
					Gravel content	0.36

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CxB:						
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Frost action	0.50			Droughty	1.00
					Content of large stones	0.03
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
DhA:						
Digby---------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
DrA:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.15
DsA:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.44
Spinks--------------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.29
			Depth to bedrock	0.32		
DsB:						
Dunbridge-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.86	Depth to bedrock	1.00	Depth to bedrock	0.86
	Depth to bedrock	0.50			Droughty	0.44
Spinks--------------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.29
			Depth to bedrock	0.32		
EaA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.43
	Depth to saturated zone	0.43				
	Low strength	0.28				
EmA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.43
	Depth to saturated zone	0.43				
	Low strength	0.28				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EnA:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Flooding	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
	Depth to saturated zone	0.43	Flooding	0.80	Depth to bedrock	0.16
	Depth to bedrock	0.15				
	Low strength	0.28				
FcA:						
Flatrock	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Low strength	1.00				
	Depth to saturated zone	0.75				
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50				
	Low strength	0.28				
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50				
	Low strength	0.28				
GpA:						
Granby	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
HaA:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HaB:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HdA:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HdB:						
Haney	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
HeA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
HeB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
HfA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HfB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
HgA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
HhA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
HvA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
HwA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00			Too clayey	1.00
	Frost action	1.00			Droughty	0.02
	Shrink-swell	0.50				
HyA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
JoA:						
Joliet---------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00			Droughty	0.85
	Low strength	1.00				
	Shrink-swell	0.50				
KeA:						
Kibbie---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.50				
KfA:						
Kibbie---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.50				
KfB:						
Kibbie---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.50				
KkA:						
Kibbie---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
	Low strength	0.50				
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
	Frost action	0.50	Flooding	0.80		
LdA:						
Latty----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
LgA:						
Latty----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
	Shrink-swell	0.50				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LgA:						
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
McA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.28				
MdA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.28				
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.28				
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.28				
Aurand	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.50				
MgA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	0.28				
Urban land	Not rated		Not rated		Not rated	

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
MmA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
MnA:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.80
	Depth to bedrock	0.79	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
MnB:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.80
	Depth to bedrock	0.79	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
NmA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NmB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
NnA:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NnB:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NnB2:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpA:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpB:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NpB2:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
NsA:						
Nappanee-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban land----------	Not rated		Not rated		Not rated	

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
OsB:						
Oshtemo	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.24		
OtA:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
OtB:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
OzB:						
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.14
			Depth to saturated zone	1.00		
Spinks	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.30
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
RbB:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
RdA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
ReA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.29
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.29				
Urban land----------	Not rated		Not rated		Not rated	
RfA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
RfB:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
RgA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.08
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	0.50				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	0.50				
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	0.90			Droughty	0.31
	Shrink-swell	0.50				
	Frost action	0.50				
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to	1.00	Ponding	1.00	Gravel content	1.00
	saturated zone		Depth to	1.00	Depth to	1.00
	Frost action	1.00	saturated zone		saturated zone	
			Depth to dense	0.50		
			layer			
Rollersville	Very limited		Very limited		Very limited	
	Depth to	1.00	Cutbanks cave	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Frost action	1.00	saturated zone			
	Low strength	1.00	Depth to dense	0.50		
	Shrink-swell	0.44	layer			
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to	1.00	Cutbanks cave	1.00	Depth to	1.00
	saturated zone		Depth to	1.00	saturated zone	
	Frost action	1.00	saturated zone			
			Depth to dense	0.50		
			layer			
Risingsun	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to	1.00	Ponding	1.00	Gravel content	1.00
	saturated zone		Depth to	1.00	Depth to	1.00
	Frost action	1.00	saturated zone		saturated zone	
	Low strength	1.00	Depth to dense	0.50		
	Shrink-swell	0.44	layer			
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
	Frost action	0.50	Flooding	0.80		
SdA:						
Seward	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Depth to	0.03
	Depth to	0.03	Depth to	1.00	saturated zone	
	saturated zone		saturated zone			
Ottokee	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.17
			Depth to	1.00		
			saturated zone			

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SdB:						
Seward--------------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03	Depth to saturated zone	1.00		
Ottokee-------------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.17
			Depth to saturated zone	1.00		
SeA:						
Shawtown------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
SeB:						
Shawtown------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.99		
SgA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.94
	Depth to saturated zone	0.94				
	Low strength	0.90				
ShA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.94
	Depth to saturated zone	0.94				
	Low strength	0.90				
SkA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	0.94
	Depth to saturated zone	0.94				
	Low strength	0.90				
SmA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Flooding	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Flooding	0.80	Depth to bedrock	0.35
	Low strength	0.90				
	Depth to bedrock	0.35				

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SmA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.80	Depth to bedrock	0.90
	Low strength	1.00				
SnA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
SoA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.60	Flooding	0.60
	Frost action	1.00				
	Low strength	1.00				
SpA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Frost action	1.00				
	Low strength	1.00				
SrB:						
Spinks--------------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.32
SrC:						
Spinks--------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.32
			Slope	0.01	Slope	0.01
SrD:						
Spinks--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.32
SsB:						
Spinks--------------	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.32
SsC:						
Spinks--------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	0.32
			Slope	0.01	Slope	0.01

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
StB:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
StC2:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Slope	0.01	Slope	0.01
	Frost action	0.50				
	Depth to saturated zone	0.03				
	Slope	0.01				
SuB2:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
SuC2:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Slope	0.01	Slope	0.01
	Frost action	0.50				
	Depth to saturated zone	0.03				
	Slope	0.01				
SuD2:						
St. Clair-----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Slope	0.96
	Slope	0.96	Slope	0.96	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
SuE2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
TeA:						
Tedrow--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
TeB:						
Tedrow--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
TfA:						
Tedrow--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Depth to saturated zone	1.00	Droughty	0.07
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
TuA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50		
	Frost action	1.00				
	Shrink-swell	0.50				
Urban land----------	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	
WbA:						
Wabasha-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Low strength	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	1.00				
WmA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.05

Table 17b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WnA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00		
Urban land----------	Not rated		Not rated		Not rated	

Table 18a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:				
Alvada	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	1.00
AmA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
AnA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
AsA:				
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Urban land	Not rated		Not rated	
BeB:				
Belmore	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
BfB:				
Belmore	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
CaA:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	Seepage	1.00
			Content of large stones	1.00

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
CbB:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	Seepage	1.00
			Content of large stones	1.00
			Slope	0.08
Marblehead	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Slope	0.08
CcA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
CdA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
CtA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
Urban land	Not rated		Not rated	
CvA:				
Cygnet	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
CxB:				
Castalia	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Content of large stones	1.00	Seepage	1.00
			Content of large stones	1.00
			Slope	0.08
Marblehead	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Slope	0.08
Urban land	Not rated		Not rated	

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
DgA:				
Digby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
DhA:				
Digby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
DsA:				
Dunbridge	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	1.00
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Depth to bedrock	0.32
	Depth to bedrock	0.73		
DsB:				
Dunbridge	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Depth to bedrock	0.32
	Depth to bedrock	0.73	Slope	0.08
EaA:				
Eel	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
EmA:				
Eel	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
EnA:				
Eel-----------------	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
FcA:				
Flatrock------------	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
FuA:				
Fulton--------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
FuB:				
Fulton--------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
FzA:				
Fulton--------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban land----------	Not rated		Not rated	
GmA:				
Genesee-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
GnA:				
Genesee-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
GpA:				
Granby--------------	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
HaA:				
Haney	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
HaB:				
Haney	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
	Restricted permeability	0.46		
HdA:				
Haney	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
HdB:				
Haney	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
	Restricted permeability	0.46		
HeA:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
HeB:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.01

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
HeB:				
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.01
HfA:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
HfB:				
Haskins	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.01
Digby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Slope	0.01
HgA:				
Hoytville	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
HhA:				
Hoytville	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
HvA:				
Hoytville	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
HwA:				
Hoytville-----------	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
HyA:				
Hoytville-----------	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban land----------	Not rated		Not rated	
JoA:				
Joliet-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KeA:				
Kibbie-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
KfA:				
Kibbie-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
KfB:				
Kibbie-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
			Slope	0.01
KkA:				
Kibbie-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
Urban land----------	Not rated		Not rated	
LbB:				
Landes-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
LdA:				
Latty	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
LgA:				
Latty	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban land	Not rated		Not rated	
MbA:				
Millgrove	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Seepage	1.00
McA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
MdA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
MeA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
MfA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Aurand	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MgA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Urban land	Not rated		Not rated	
MhA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
MkA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
MmA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban land	Not rated		Not rated	
MnA:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00		
MnB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	0.01
NmA:				
Nappanee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
NmB:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NnA:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
NnB:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NnB2:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NpA:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
NpB:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NpB2:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.01
NsA:				
Nappanee-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Urban land----------	Not rated		Not rated	

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
OsB:				
Oshtemo	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
	Depth to saturated zone	0.65	Depth to saturated zone	0.02
OtA:				
Ottokee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
OtB:				
Ottokee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
OzB:				
Ottokee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
Urban land	Not rated		Not rated	
Pt:				
Pits, quarry	Not rated		Not rated	
RbA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
RbB:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.08

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
ReA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban land	Not rated		Not rated	
RfA:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Tedrow	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
RfB:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Slope	0.08
	Filtering capacity	1.00		
Tedrow	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Slope	0.08
	Filtering capacity	1.00		
RgA:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
RgA:				
Tedrow	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Urban land	Not rated		Not rated	
RhA:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
RhB:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
			Slope	0.08
RkA:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
RmA:				
Risingsun	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Content of organic matter	1.00
Rollersville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
RnA:				
Rollersville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
Risingsun	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Content of organic matter	1.00

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
RsA:				
Rossburg	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
SdA:				
Seward	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
Ottokee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
SdB:				
Seward	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Slope	0.08
	Filtering capacity	1.00		
Ottokee	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Slope	0.08
	Filtering capacity	1.00		
SeA:				
Shawtown	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
SeB:				
Shawtown	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
	Restricted permeability	0.46		

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
SgA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
ShA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
SkA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
SmA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.28
SnA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.28
SoA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.28

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SpA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.72	Seepage	0.28
SrB:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
SrC:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
SrD:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
SsB:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.01
SsC:				
Spinks	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
StB:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
StC2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
SuB2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SuC2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
SuD2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.96		
SuE2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
TeA:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
TeB:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
TfA:				
Tedrow	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
Urban land	Not rated		Not rated	
TpA:				
Toledo	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
TuA:				
Toledo	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		

Table 18a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
TuA:				
Urban land	Not rated		Not rated	
UcA, UcE:				
Udorthents	Not rated		Not rated	
Ur:				
Urban land	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WbA:				
Wabasha	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00		
WmA:				
Wauseon	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
WnA:				
Wauseon	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
WyA:				
Wauseon	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
WzA:				
Wauseon	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
Urban land	Not rated		Not rated	

Table 18b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
AmA:						
Aurand--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
AnA:						
Aurand--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
AsA:						
Aurand--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Urban land----------	Not rated		Not rated		Not rated	
BeB:						
Belmore-------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
BfB:						
Belmore-------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.09
CaA:						
Castalia------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.26

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
CbB:						
Castalia------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.02
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
CcA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CdA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CtA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00	Seepage	0.52
	Too sandy	0.50	Depth to saturated zone	1.00	Too sandy	0.50
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	1.00
	Content of large stones	1.00			Carbonate content	1.00
					Content of large stones	1.00
					Gravel content	0.02
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DhA:						
Digby----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
DrA:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
DsA:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
Spinks--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Seepage	1.00
	Seepage	1.00	Depth to bedrock	0.32	Too sandy	0.50
	Too sandy	0.50			Depth to bedrock	0.32
DsB:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
Spinks--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Seepage	1.00
	Seepage	1.00	Depth to bedrock	0.32	Too sandy	0.50
	Too sandy	0.50			Depth to bedrock	0.32
EaA:						
Eel-----------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
EmA:						
Eel-----------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
EnA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Depth to bedrock	1.00	Depth to bedrock	1.00		
FcA:						
Flatrock------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
FzA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
GnA:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
GpA:						
Granby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00	Seepage	1.00	Too sandy	1.00
	Ponding	1.00	Ponding	1.00	Seepage	1.00
					Ponding	1.00
HaA:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.24
HaB:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.24

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HdA:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.24
HdB:						
Haney	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.24
HeA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HeB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HfA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HfB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
HfB:						
Digby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
HgA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
					Hard to compact	1.00
	Too clayey	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
HhA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
					Hard to compact	1.00
	Too clayey	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
HvA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
					Hard to compact	1.00
	Too clayey	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
HwA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
					Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
HyA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
					Hard to compact	1.00
	Too clayey	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
Urban land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KeA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00			Too sandy	1.00
KfA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
KfB:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00			Too sandy	1.00
KkA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00			Too sandy	1.00
Urban land----------	Not rated		Not rated		Not rated	
LbB:						
Landes--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00		
LdA:						
Latty---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
LgA:						
Latty---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	1.00
	Too clayey	0.50			Hard to compact	1.00
					Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
MbA:						
Millgrove-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Seepage	0.52
McA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MdA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
MgA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
Urban land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00			Too clayey	1.00
MnB:						
Milton--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00			Too clayey	1.00
NmA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NmB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NnB2:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
NsA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Urban land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Somewhat limited		Very limited		Very limited	
	Too sandy	0.50	Seepage	1.00	Seepage	1.00
					Too sandy	0.50
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.44
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50			Depth to saturated zone	0.44
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
OzB:						
Ottokee-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
					Too sandy	0.50
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.44
	Too sandy	0.50				
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	
RbA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00		
	Too clayey	0.50			Too clayey	0.50
RbB:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00		
	Too clayey	0.50			Too clayey	0.50
RdA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00		
	Too clayey	0.50			Too clayey	0.50
ReA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00		
	Too clayey	0.50			Too clayey	0.50
Urban land----------	Not rated		Not rated		Not rated	
RfA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RfB:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
RgA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50	Seepage	1.00		
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
RhB:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
RkA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
RmA:						
Risingsun-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too clayey	0.50	Ponding	1.00	Too clayey	0.50
					Gravel content	0.01
Rollersville--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50	Seepage	1.00	Too clayey	0.50

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RnA:						
Rollersville--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	1.00	Seepage	1.00	Too sandy	1.00
					Seepage	0.52
Risingsun-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too clayey	0.50	Ponding	1.00	Too clayey	0.50
					Gravel content	0.01
RsA:						
Rossburg------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00		
SdA:						
Seward--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Seepage	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Seepage	0.52
			Depth to saturated zone	0.44		
Ottokee-------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.84	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Too sandy	0.50
	Too sandy	0.50	Depth to saturated zone	0.17	Depth to saturated zone	0.44
SdB:						
Seward--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Seepage	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Seepage	0.52
			Depth to saturated zone	0.44		
Ottokee-------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.84	Seepage	1.00	Seepage	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Too sandy	0.50
	Too sandy	0.50	Depth to saturated zone	0.17	Depth to saturated zone	0.44
SeA:						
Shawtown------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.24
	Depth to saturated zone	0.68	Depth to saturated zone	0.04		
SeB:						
Shawtown------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.24
	Depth to saturated zone	0.68	Depth to saturated zone	0.04		

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SgA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
ShA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
SkA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00	Seepage	1.00		
SmA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	0.50
	Too clayey	0.50				
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
SnA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
SoA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
SpA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SrB:						
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
SrC:						
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
SrD:						
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
SsB:						
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
SsC:						
Spinks--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
StB:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
StC2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuB2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuC2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
SuD2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
SuE2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Depth to saturated zone	0.95	Depth to saturated zone	0.44	Too clayey	0.50
	Too clayey	0.50				
TeA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
TeB:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
TfA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
TuA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents----------	Not rated		Not rated		Not rated	

Table 18b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
WmA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		
WnA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Ponding	1.00	Seepage	1.00	Ponding	1.00
	Too sandy	0.50	Ponding	1.00	Too sandy	0.50
WyA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		
WzA:						
Wauseon	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Ponding	1.00		
Urban land	Not rated		Not rated		Not rated	

Table 19a.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
AmA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
			Thin layer	0.23		
AnA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
AsA:						
Aurand	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.43	Cutbanks cave	1.00
					Depth to water	0.25
BfB:						
Belmore	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.43	Cutbanks cave	1.00
					Depth to water	0.25
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	1.00	Content of large stones	1.00		
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.99	Content of large stones	1.00		
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CcA:						
Colwood-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
CdA:						
Colwood-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
CtA:						
Colwood-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.99	Content of large stones	1.00		
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
DhA:						
Digby---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
DrA:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.85				
DsA:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.85				

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DsA:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Depth to bedrock	0.08	Piping	1.00		
DsB:						
Dunbridge	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	0.85				
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Depth to bedrock	0.08	Piping	1.00		
EaA:						
Eel	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
EmA:						
Eel	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
EnA:						
Eel	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.50			Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.20		
FcA:						
Flatrock	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
FuA:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Hard to compact	1.00		
			Thin layer	0.13		
FuB:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Hard to compact	1.00		
			Piping	0.50		
			Thin layer	0.13		
FzA:						
Fulton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban land	Not rated		Not rated		Not rated	

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
GmA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
GnA:						
Genesee	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	1.00		
			Piping	1.00		
HaA:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HaB:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HdA:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HdB:						
Haney	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Depth to water	0.14
HeA:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
HeB:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
HfA:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HfB:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
Digby	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
HgA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HhA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HvA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HwA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
HyA:						
Hoytville	Not limited		Very limited		Very limited	
			Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Hard to compact	1.00		
Urban land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Piping	0.50		
KeA:						
Kibbie	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KfA:						
Kibbie----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
KfB:						
Kibbie----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
KkA:						
Kibbie----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		
Urban land------------	Not rated		Not rated		Not rated	
LbB:						
Landes----------------	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
LdA:						
Latty-----------------	Not limited		Very limited		Very limited	
			Ponding	1.00	Slow refill	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
LgA:						
Latty-----------------	Not limited		Very limited		Very limited	
			Ponding	1.00	Slow refill	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Urban land------------	Not rated		Not rated		Not rated	
MbA:						
Millgrove-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Thin layer	0.13		
McA:						
Mermill---------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
MdA:						
Mermill---------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
MeA:						
Mermill-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
MfA:						
Mermill-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Aurand--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
MgA:						
Mermill-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	
MhA:						
Millsdale-----------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.50		
			Thin layer	0.13		
MkA:						
Millsdale-----------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.50		
			Thin layer	0.13		
MmA:						
Millsdale-----------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.50		
			Thin layer	0.13		
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.95	Thin layer	0.73	Depth to water	1.00
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MnB:						
Milton-------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.95	Thin layer	0.73	Depth to water	1.00
			Piping	0.50		
NmA:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NmB:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NnA:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NnB:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NnB2:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NpA:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NpB:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NpB2:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
NsA:						
Nappanee-----------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
OzB:						
Ottokee	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.07
			Depth to saturated zone	0.84		
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, Quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		
RbB:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RdA:						
Randolph------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		
ReA:						
Randolph------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.81	Depth to saturated zone	1.00	Depth to bedrock	1.00
					Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.13		
Urban land----------	Not rated		Not rated		Not rated	
RfA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
RfB:						
Rimer---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
RgA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	
RhA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RhB:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RkA:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RmA:						
Risingsun-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Rollersville--------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.50		
RnA:						
Rollersville--------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.50		
Risingsun-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
RsA:						
Rossburg------------	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
SdA:						
Seward--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.95	Depth to water	1.00
			Thin layer	0.63		
Ottokee-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Depth to saturated zone	0.84		
SdB:						
Seward--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.95	Depth to water	1.00
			Thin layer	0.63		
Ottokee-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Depth to saturated zone	0.84		
SeA:						
Shawtown------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Depth to water	1.00

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
SeB:						
Shawtown------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Depth to water	1.00
SgA:						
Shoals--------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
ShA:						
Shoals--------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SkA:						
Shoals--------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SmA:						
Shoals--------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.50			Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.20		
Sloan---------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Ponding	1.00	Depth to bedrock	1.00
	Seepage	0.25	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Thin layer	0.80		
			Piping	0.50		
SnA:						
Sloan---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SoA:						
Sloan---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
SpA:						
Sloan---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.25	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03	Piping	1.00		
SsB:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
StB:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
StC2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuB2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuC2:						
St. Clair	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuD2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.02	Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
SuE2:						
St. Clair	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.12	Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TeA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
TeB:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
TfA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	1.00		
			Piping	1.00		
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
TuA:						
Toledo--------------	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Urban land----------	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	
WbA:						
Wabasha-------------	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		

Table 19a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WmA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
WnA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Seepage	1.00		
			Piping	1.00		
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		
Urban land----------	Not rated		Not rated		Not rated	

Table 19b.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Somewhat limited		Not limited		Very limited	
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
BfB:						
Belmore	Somewhat limited		Not limited		Very limited	
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.99	Content of large stones	1.00
	Droughty	1.00			Depth to bedrock	0.44
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.97	Content of large stones	1.00
	Droughty	1.00			Depth to bedrock	0.39

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CbB:						
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Content of large stones	0.18	Depth to bedrock	0.95
	Content of large stones	0.18				
CcA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
CdA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
CtA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00	Ponding	1.00
Urban land----------	Not rated		Not rated		Not rated	
CvA:						
Cygnet--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00
CxB:						
Castalia------------	Very limited		Very limited		Very limited	
	Content of large stones	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.97	Content of large stones	1.00
	Droughty	1.00			Depth to bedrock	0.39
Marblehead----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Content of large stones	0.18	Depth to bedrock	0.95
	Content of large stones	0.18				
Urban land----------	Not rated		Not rated		Not rated	
DgA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00
DhA:						
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
DrA:						
Dunbridge-----------	Very limited		Somewhat limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
DsA:						
Dunbridge-----------	Very limited		Somewhat limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
Spinks--------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to bedrock	0.32			Depth to saturated zone	1.00
DsB:						
Dunbridge-----------	Very limited		Somewhat limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.86	Depth to saturated zone	1.00
	Droughty	1.00			Depth to bedrock	0.27
Spinks--------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to bedrock	0.32			Depth to saturated zone	1.00
EaA:						
Eel-----------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
EmA:						
Eel-----------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
EnA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	0.95	Depth to bedrock	0.35	Flooding	1.00
					Depth to bedrock	0.09
FcA:						
Flatrock------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.50
FuA:						
Fulton--------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
FuB:						
Fulton--------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91	Slope	0.04
FzA:						
Fulton--------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
Urban land----------	Not rated		Not rated		Not rated	
GmA:						
Genesee-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
GnA:						
Genesee-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
GpA:						
Granby--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Droughty	1.00	Ponding	1.00	Cutbanks cave	1.00
			Too sandy	1.00		
HaA:						
Haney---------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HaB:						
Haney---------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HdA:						
Haney---------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00
HdB:						
Haney---------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.24	Too sandy	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Cutbanks cave	1.00

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HeA:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HeB:						
Haskins-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HfA:						
Haskins-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HfB:						
Haskins-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Digby---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
HgA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
HhA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.22	Ponding	1.00	Restricted permeability	0.22
			Restricted permeability	0.22		
HvA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.22	Ponding	1.00	Restricted permeability	0.22
			Restricted permeability	0.22		
HwA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Droughty	1.00	Ponding	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
HyA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.22	Ponding	1.00	Restricted permeability	0.22
			Restricted permeability	0.22		
Urban land----------	Not rated		Not rated		Not rated	
JoA:						
Joliet--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.66
					Restricted permeability	0.22
	Droughty	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22				
KeA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Cutbanks cave	1.00
			Too sandy	1.00		
KfA:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
KfB:						
Kibbie--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Cutbanks cave	1.00
			Too sandy	1.00		

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
KkA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	1.00
Urban land	Not rated		Not rated		Not rated	
LbB:						
Landes	Not limited		Not limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
LdA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.91	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.91	Restricted permeability	0.91
LgA:						
Latty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
Urban land	Not rated		Not rated		Not rated	
MbA:						
Millgrove	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
McA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
MdA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.40	Restricted permeability	0.40	Restricted permeability	0.40
MgA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.94	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.94	Restricted permeability	0.94
Urban land	Not rated		Not rated		Not rated	
MhA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
MkA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
MmA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.22	Depth to bedrock	0.29	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.07
Urban land	Not rated		Not rated		Not rated	
MnA:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.79	Depth to bedrock	0.23
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
MnB:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.79	Depth to bedrock	0.23
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
NmA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	1.00
NmB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.94	Restricted permeability	0.94	Restricted permeability	0.94
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NnB2:						
Nappanee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
NpB2:						
Nappanee------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
NsA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
Urban land----------	Not rated		Not rated		Not rated	
OsB:						
Oshtemo-------------	Not limited		Very limited		Very limited	
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.04
OtA:						
Ottokee-------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks--------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
OtB:						
Ottokee-------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks--------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
OzB:						
Ottokee-------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
Spinks--------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry--------	Not rated		Not rated		Not rated	

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
RbB:						
Randolph	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
RdA:						
Randolph	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
ReA:						
Randolph	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.29	Depth to bedrock	0.07
	Restricted permeability	0.22	Restricted permeability	0.22		
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
RfB:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RfB:						
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
RgA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Droughty	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
Tedrow	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.94
	Droughty	1.00	Restricted permeability	0.94		
	Restricted permeability	0.94				
Urban land	Not rated		Not rated		Not rated	
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00				
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00				
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00				
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.41	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.41	Subsidence	1.00
					Restricted permeability	0.41
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.41	Restricted permeability	0.41	Restricted permeability	0.41

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RnA:						
Rollersville--------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.41	Too sandy	1.00	Cutbanks cave	1.00
			Restricted permeability	0.41	Restricted permeability	0.41
Risingsun-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.41	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.41	Subsidence	1.00
					Restricted permeability	0.41
RsA:						
Rossburg------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
					Depth to saturated zone	1.00
SdA:						
Seward--------------	Somewhat limited		Very limited		Not limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ottokee-------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
SdB:						
Seward--------------	Somewhat limited		Very limited		Not limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ottokee-------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	1.00		
SeA:						
Shawtown------------	Somewhat limited		Very limited		Not limited	
	Depth to saturated zone	0.24	Depth to saturated zone	1.00		
SeB:						
Shawtown------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Slope	0.04
SgA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00
ShA:						
Shoals--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SkA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
					Frost action	1.00
SmA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	1.00			Flooding	1.00
			Depth to bedrock	0.35	Depth to bedrock	0.09
Sloan----------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00			Flooding	1.00
			Ponding	1.00	Frost action	1.00
			Depth to bedrock	0.90	Depth to bedrock	0.30
SnA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
			Ponding	1.00	Flooding	1.00
SoA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
			Ponding	1.00	Flooding	1.00
SpA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
			Ponding	1.00	Flooding	1.00
SrB:						
Spinks---------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
SrC:						
Spinks---------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
					Slope	0.84
SrD:						
Spinks---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
SsB:						
Spinks---------------	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
					Depth to saturated zone	1.00
					Slope	0.84
StB:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
StC2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00	Slope	0.84
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuB2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuC2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00	Slope	0.84
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuD2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00		
	Depth to saturated zone	0.68	Restricted permeability	0.91		

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
TeA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
TeB:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
TfA:						
Tedrow--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00		
Urban land----------	Not rated		Not rated		Not rated	
TpA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.91	Ponding	1.00	Restricted permeability	0.91
			Restricted permeability	0.91		
TuA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.91	Ponding	1.00	Restricted permeability	0.91
			Restricted permeability	0.91		
Urban land----------	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	
WbA:						
Wabasha-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.91	Ponding	1.00	Flooding	1.00
			Restricted permeability	0.91	Restricted permeability	0.91

Table 19b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WmA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Droughty	1.00	Ponding	1.00	Restricted permeability	0.94
	Restricted permeability	0.94	Restricted permeability	0.94		
WnA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
			Ponding	1.00	Cutbanks cave	1.00
			Too sandy	1.00		
WyA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.94	Ponding	1.00	Restricted permeability	0.94
			Restricted permeability	0.94		
WzA:						
Wauseon-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Restricted permeability	0.94	Ponding	1.00	Restricted permeability	0.94
			Restricted permeability	0.94		
Urban land----------	Not rated		Not rated		Not rated	

Table 20.--Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AgA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
AmA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
AnA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
AsA:						
Aurand	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
BeB:						
Belmore	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
BfB:						
Belmore	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
CaA:						
Castalia	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to bedrock	0.99	Depth to bedrock	0.99	Depth to bedrock	0.99
	Cobble content	0.87	Cobble content	0.87	Cobble content	0.87
	Large stones on the surface	0.18	Large stones on the surface	0.18	Large stones on the surface	0.18

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CbB:						
Castalia	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to bedrock	0.97	Depth to bedrock	0.97	Depth to bedrock	0.97
	Cobble content	0.87	Cobble content	0.87	Cobble content	0.87
	Large stones on the surface	0.18	Large stones on the surface	0.18	Large stones on the surface	0.18
Marblehead	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
CcA:						
Colwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
CdA:						
Colwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Colwood	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
CvA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
CxB:						
Castalia	Not rated		Not rated		Not rated	
Marblehead	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
DgA:						
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DhA:						
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
DrA:						
Dunbridge-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Droughty	0.94	Droughty	0.94	Droughty	0.94
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
DsA:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
Spinks--------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Leaching	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
DsB:						
Dunbridge-----------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Depth to bedrock	0.42	Depth to bedrock	0.42	Depth to bedrock	0.42
Spinks--------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Leaching	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
EaA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
EmA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
EnA:						
Eel-----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to bedrock	0.35	Depth to bedrock	0.35	Depth to bedrock	0.35

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
FuA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40				
FuB:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40			Too steep for surface application	0.08
FzA:						
Fulton	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
GmA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GnA:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GpA:						
Granby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Leaching	0.45	Droughty	0.16	Droughty	0.16
	Droughty	0.16				
HaA:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HaB:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
HdA:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HdB:						
Haney	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
HeA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.01	Droughty	0.01	Droughty	0.01
HeB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.01	Droughty	0.01	Droughty	0.01
HfA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
HfA:						
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HfB:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Digby	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HgA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
HhA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HvA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HwA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.38	Droughty	0.38	Droughty	0.38

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
HyA:						
Hoytville	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Runoff	0.40				
KeA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KfA:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KfB:						
Kibbie	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
KkA:						
Kibbie	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
LbB:						
Landes	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
LdA:						
Latty	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Runoff	0.40				
LgA:						
Latty	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MbA:						
Millgrove-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
McA:						
Mermill------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
MdA:						
Mermill------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MeA:						
Mermill------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MfA:						
Mermill------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Aurand-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MgA:						
Mermill------------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MhA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.24	Droughty	0.24	Droughty	0.24

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MkA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.24	Droughty	0.24	Droughty	0.24
MmA:						
Millsdale-----------	Not rated		Not rated		Not rated	
Urban land----------	Not rated		Not rated		Not rated	
MnA:						
Milton--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
	Droughty	0.64	Droughty	0.64	Droughty	0.64
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
MnB:						
Milton--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
	Droughty	0.64	Droughty	0.64	Droughty	0.64
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
NmA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Droughty	0.03	Droughty	0.03	Droughty	0.03
	Too acid	0.02	Filtering capacity	0.01	Filtering capacity	0.01
NmB:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Droughty	0.03	Droughty	0.03	Droughty	0.03
	Too acid	0.02	Filtering capacity	0.01	Filtering capacity	0.01
NnA:						
Nappanee------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NnB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NsA:						
Nappanee	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
OtA:						
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Leaching	0.45	Droughty	0.32	Droughty	0.32
	Droughty	0.32				
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Leaching	0.45	Droughty	0.38	Droughty	0.38
	Droughty	0.38	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
OtB:						
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Leaching	0.45	Droughty	0.32	Droughty	0.32
	Droughty	0.32				
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Leaching	0.45	Droughty	0.38	Droughty	0.38
	Droughty	0.38	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
OzB:						
Ottokee	Not rated		Not rated		Not rated	
Spinks	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits, quarry	Not rated		Not rated		Not rated	
RbA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RbB:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
RdA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.29	Depth to bedrock	0.29	Depth to bedrock	0.29
	Droughty	0.09	Droughty	0.09	Droughty	0.09
	Too acid	0.02	Too acid	0.07	Too acid	0.07
ReA:						
Randolph	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
RfA:						
Rimer	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.27	Droughty	0.27	Droughty	0.27
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Tedrow	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.09	Droughty	0.09	Droughty	0.09
RfB:						
Rimer	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.27	Droughty	0.27	Droughty	0.27
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Tedrow	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.09	Droughty	0.09	Droughty	0.09
RgA:						
Rimer	Not rated		Not rated		Not rated	
Tedrow	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RhA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff	0.40				
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff	0.40				
RkA:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.98	Droughty	0.98	Droughty	0.98
	Runoff	0.40				
RmA:						
Risingsun	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Droughty	0.28	Droughty	0.28	Droughty	0.28
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
RnA:						
Rollersville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Droughty	0.06	Droughty	0.06	Droughty	0.06
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Risingsun	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.75	Restricted permeability	0.61	Restricted permeability	0.61
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
SdA:						
Seward	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Droughty	0.01	Droughty	0.01	Droughty	0.01
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Droughty	0.54	Droughty	0.54	Droughty	0.54
SdB:						
Seward	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.02	Too acid	0.07	Too acid	0.07
	Droughty	0.01	Droughty	0.01	Droughty	0.01
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.84	Depth to saturated zone	0.84	Depth to saturated zone	0.84
	Droughty	0.54	Droughty	0.54	Droughty	0.54
SeA:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
SeB:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
					Too steep for surface application	0.08

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
SgA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
ShA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SkA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SmA:						
Shoals---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to bedrock	0.35	Depth to bedrock	0.35	Depth to bedrock	0.35
Sloan----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.85	Restricted permeability	0.72	Restricted permeability	0.72
	Droughty	0.53	Droughty	0.53	Droughty	0.53
SnA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SoA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
SpA:						
Sloan----------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
SrB:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Droughty	0.50
	Leaching	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
SrC:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Too steep for surface application	1.00
	Leaching	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Too acid	0.07
SrD:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.50	Droughty	0.50	Too steep for sprinkler application	1.00
	Leaching	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02			Too acid	0.07
SsB:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Droughty	0.50
	Leaching	0.45	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
SsC:						
Spinks	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.50	Droughty	0.50	Too steep for surface application	1.00
	Leaching	0.45	Too acid	0.07	Droughty	0.50
	Too acid	0.02	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Too acid	0.07

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
StB:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Runoff	0.40	Droughty	0.01	Droughty	0.01
	Droughty	0.01				
StC2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Runoff	0.40	Slope	0.01	Depth to saturated zone	0.95
	Droughty	0.01	Droughty	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Droughty	0.01
SuB2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Runoff	0.40	Droughty	0.02	Droughty	0.02
	Droughty	0.02				
SuC2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Runoff	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01			Droughty	0.02
SuD2:						
St. Clair-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
	Slope	0.96	Slope	0.96	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for sprinkler application	0.98
	Runoff	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02			Droughty	0.02

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
SuE2:						
St. Clair	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Restricted permeability	1.00
	Runoff	0.40	Droughty	0.02	Depth to saturated zone	0.95
	Droughty	0.02			Droughty	0.02
TeA:						
Tedrow	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Droughty	0.16	Droughty	0.16	Droughty	0.16
TeB:						
Tedrow	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Droughty	0.16	Droughty	0.16	Droughty	0.16
TfA:						
Tedrow	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
TpA:						
Toledo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40				
TuA:						
Toledo	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	
UcA, UcE:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 20.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
WbA:						
Wabasha	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40				
WmA:						
Wauseon	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.58	Droughty	0.58	Droughty	0.58
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
WnA:						
Wauseon	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.01	Droughty	0.01	Droughty	0.01
WyA:						
Wauseon	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.31	Droughty	0.31	Droughty	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
WzA:						
Wauseon	Not rated		Not rated		Not rated	
Urban land	Not rated		Not rated		Not rated	

Table 21.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AgA:												
Alvada----------	0-10	Loam	CL	A-6	0	0	85-100	85-100	70-95	50-80	25-40	10-20
	10-39	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	85-100	80-100	70-95	30-75	25-45	10-25
	39-46	Gravelly loam, gravelly clay loam	CL, SC	A-7, A-2, A-6	0	0-5	60-100	60-100	35-70	30-60	25-45	10-25
	46-50	Loam, very gravelly loamy sand, very gravelly sandy loam	SC, SC-SM, SP-SM, SM	A-6, A-1, A-2, A-3, A-4	0	0-5	60-100	30-100	30-70	5-50	0-30	NP-15
	50-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
AmA:												
Aurand----------	0-10	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	95-100	85-100	65-100	30-50	15-30	NP-10
	10-30	Clay loam, loam, sandy clay loam	SC, CL	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	30-38	Silty clay loam, loam, sandy loam	SC, CL, CL-ML, SC-SM	A-2, A-4, A-5, A-7, A-6	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	38-59	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	59-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AnA:												
Aurand----------	0-11	Loam	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-29	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	29-33	Silty clay loam, loam, sandy loam	CL, SC-SM, SC, CL-ML	A-7, A-5, A-2, A-4, A-6	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	33-48	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	48-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
AsA:												
Aurand----------	0-11	Loam	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-25	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	25-34	Silty clay loam, loam, sandy loam	CL-ML, SC, CL, SC-SM	A-2, A-4, A-6, A-7, A-5	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	34-51	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	51-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
Urban land.												
BeB:												
Belmore---------	0-8	Sandy loam	CL-ML, CL, SC, SC-SM	A-4	0	0	85-100	80-100	50-90	40-55	15-30	NP-10
	8-40	Sandy clay loam, clay loam, gravelly sandy clay loam, loam	CL, SC-SM, SC, CL-ML	A-2, A-4, A-6	0	0	85-100	50-100	40-75	15-70	20-40	5-20
	40-60	Gravelly loamy sand, sand, coarse sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
BfB:												
Belmore---------	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	85-100	80-100	60-90	50-80	20-35	5-15
	8-40	Sandy clay loam, clay loam, gravelly sandy clay loam, loam	SC, CL, SC-SM, CL-ML	A-4, A-6, A-2	0	0	85-100	50-100	40-75	15-70	20-40	5-20
	40-60	Gravelly loamy sand, sand, coarse sandy loam	SM, SC, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
CaA:												
Castalia--------	0-7	Very cobbly loam	SC-SM, GC-GM, SC, GC	A-1, A-2	0-15	20-40	45-65	25-50	15-40	10-35	20-30	5-15
	7-21	Extremely cobbly fine sandy loam, very flaggy sandy loam, extremely channery loam, extremely flaggy silt loam	GC-GM, SP-SC, SC-SM, GP-GC, GC, SC	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	21-23	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CbB:												
Castalia--------	0-9	Very stony fine sandy loam	SC-SM, GC, GC-GM, SC	A-1, A-2	0-15	20-40	45-65	25-60	15-40	5-25	20-30	5-15
	9-16	Extremely stony fine sandy loam, extremely channery loam, very flaggy sandy loam, extremely flaggy silt loam	SP-SC, GC, GC-GM, GP-GC, SC, SC-SM	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	16-22	Extremely stony fine sandy loam, extremely flaggy loam, very flaggy sandy loam, very channery silt loam	GP-GC, GC, SP-SC, GC-GM, SC-SM, SC	A-2, A-1	0-60	30-80	50-85	5-50	5-45	5-35	20-30	5-15
	22-24	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Marblehead------	0-6	Gravelly silt loam	CL-ML, SC-SM, CL, SC	A-6, A-2, A-4	0-5	0-10	90-100	70-100	60-90	30-75	20-40	5-15
	6-8	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
CcA:												
Colwood---------	0-8	Fine sandy loam	SC-SM, SM, SC	A-4	0	0	100	100	85-100	35-50	15-30	NP-10
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	SC-SM, CL-ML, SC, CL	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	CL, SM, SC, ML, CL-ML, SC-SM	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CdA:												
Colwood---------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	50-70	20-35	5-15
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	SC-SM, CL, CL-ML, SC	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	SC, SM, SC-SM, ML, CL, CL-ML	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10
CtA:												
Colwood---------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	50-70	20-35	5-15
	8-38	Sandy clay loam, silty clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	100	80-100	40-90	25-45	5-20
	38-60	Stratified fine sand to very fine sand to silt	SC-SM, ML, SC, SM, CL-ML, CL	A-2, A-4	0	0	100	100	70-100	30-80	10-25	NP-10
Urban land.												
CvA:												
Cygnet----------	0-11	Loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	85-100	75-100	70-100	40-70	20-30	5-15
	11-30	Clay loam, loam, gravelly clay loam	CL-ML, SC, CL, SC-SM	A-4, A-6, A-7, A-2	0	0	80-100	55-100	50-100	20-70	25-45	5-25
	30-53	Loam, sandy loam, gravelly loamy coarse sand	SC, SC-SM, ML, CL, SM, CL-ML	A-2, A-4, A-6	0	0	80-100	55-100	45-85	10-65	10-35	NP-15
	53-80	Silty clay loam, clay loam, silty clay	SC, CL	A-6, A-7	0	0-5	95-100	90-100	65-95	45-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CxB:												
Castalia--------	0-9	Very stony fine sandy loam	SC-SM, SC, GC-GM, GC	A-1, A-2	0-15	20-40	45-65	25-60	15-40	5-25	20-30	5-15
	9-16	Extremely stony fine sandy loam, extremely channery loam, very flaggy sandy loam, extremely flaggy silt loam	GC-GM, GP-GC, SC-SM, SP-SC, SC, GC	A-1, A-2	0-40	20-50	45-80	10-50	10-45	5-35	20-30	5-15
	16-22	Extremely stony fine sandy loam, extremely flaggy loam, very flaggy sandy loam, very channery silt loam	SP-SC, SC-SM, SC, GP-GC, GC-GM, GC	A-1, A-2	0-60	30-80	50-85	5-50	5-45	5-35	20-30	5-15
	22-24	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Marblehead------	0-6	Gravelly silt loam	CL, CL-ML, SC, SC-SM	A-4, A-2, A-6	0-5	0-10	90-100	70-100	60-90	30-75	20-40	5-15
	6-8	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Urban land.												
DgA:												
Digby-----------	0-7	Sandy loam	SC-SM, SM, SC	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	7-32	Loam, clay loam, sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	32-60	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SM, SC-SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DhA:												
Digby-----------	0-7	Loam	SC, CL, CL-ML, SC-SM	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	7-32	Loam, clay loam, sandy loam	CL-ML, CL, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	32-60	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SM, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
DrA:												
Dunbridge-------	0-8	Sandy loam	SC, CL, CL-ML, ML, SC-SM, SM	A-2, A-4	0	0-5	90-100	75-100	50-85	20-60	10-25	NP-10
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC-SM, SC, SM	A-2, A-4, A-1	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	SC-SM, CL-ML, SC, CL, SP-SC	A-2, A-4, A-1	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
DsA:												
Dunbridge-------	0-8	Loamy fine sand	SM, SP-SM, SC-SM	A-4, A-1, A-2	0	0-5	90-100	75-100	40-80	10-45	0-20	NP-5
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC, SC-SM, SM	A-1, A-2, A-4	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	CL, SC-SM, SC, CL-ML, SP-SC	A-1, A-2, A-4	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DsA:												
Spinks----------	0-9	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	9-51	Loamy fine sand, sand, fine sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	51-53	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
DsB:												
Dunbridge-------	0-8	Loamy fine sand	SC-SM, SP-SM, SM	A-1, A-2, A-4	0	0-5	90-100	75-100	40-80	10-45	0-20	NP-5
	8-14	Sandy loam, fine sandy loam, loamy fine sand	SC, SC-SM, SM	A-2, A-4, A-1	0	0-5	90-100	75-100	35-90	20-50	15-30	NP-10
	14-25	Sandy clay loam, gravelly loam, fine sandy loam	SP-SC, CL-ML, SC, SC-SM, CL	A-2, A-4, A-1	0	0-5	90-100	50-100	35-85	10-60	20-35	5-20
	25-27	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Spinks----------	0-9	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	9-51	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	51-53	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
EaA:												
Eel-------------	0-8	Loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	60-75	20-40	5-15
	8-38	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	38-60	Loam, fine sandy loam, sandy loam	SC-SM, CL-ML, CL, SC	A-4, A-6, A-2	0	0	100	75-100	60-90	30-70	20-40	5-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
EmA:												
Eel-------------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	90-100	75-85	20-40	5-15
	8-38	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	38-60	Loam, fine sandy loam, sandy loam	CL, SC-SM, SC, CL-ML	A-2, A-4, A-6	0	0	100	75-100	60-90	30-70	20-40	5-15
EnA:												
Eel-------------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	75-85	20-40	5-15
	9-34	Loam, clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	55-85	25-45	5-15
	34-36	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
FcA:												
Flatrock--------	0-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	70-90	20-40	5-20
	11-52	Silt loam, loam, silty clay loam	CL-ML, CL	A-4, A-6, A-7, A-5	0	0	100	90-100	85-100	60-90	20-45	5-25
	52-80	Stratified coarse sandy loam to loam	SC-SM, SC, CL, CL-ML	A-4, A-6, A-5, A-7, A-2	0	0	100	75-100	60-90	30-80	20-45	5-25
FuA:												
Fulton----------	0-9	Silty clay loam	CL	A-7, A-6	0	0	100	100	85-100	70-90	30-45	10-25
	9-32	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	32-47	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	47-68	Silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	85-100	35-50	15-25
	68-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
FuB:												
Fulton----------	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	85-100	70-90	30-45	10-25
	7-32	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	32-41	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	41-63	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-50	15-25
	63-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
FzA:												
Fulton----------	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	85-100	70-90	30-45	10-25
	8-28	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	28-40	Silty clay loam, clay, silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	40-60	20-35
	40-64	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-50	15-25
	64-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
Urban land.												
GmA:												
Genesee---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-75	25-45	5-15
	9-42	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-90	25-45	5-15
	42-60	Stratified sandy loam to silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-2	0	0	90-100	75-100	60-90	30-90	20-35	5-15
GnA:												
Genesee---------	0-9	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	75-90	25-45	5-15
	9-42	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	90-100	50-90	25-45	5-15
	42-60	Stratified sandy loam to silt loam	SC-SM, SC, CL-ML, CL	A-4, A-6, A-2	0	0	90-100	75-100	60-90	30-90	20-35	5-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
GpA:												
Granby----------	0-11	Loamy fine sand	SM, SC-SM	A-2	0	0	100	90-100	50-75	15-30	0-20	NP-5
	11-33	Loamy fine sand, fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	90-100	50-75	5-35	0-20	NP-5
	33-74	Stratified sand to fine sand to loamy fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	74-80	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-25
HaA:												
Haney-----------	0-7	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	85-100	75-100	50-85	30-45	15-25	NP-10
	7-34	Clay loam, sandy clay loam, gravelly loam	SC, CL	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HaB:												
Haney-----------	0-7	Sandy loam	SC-SM, SC, SM	A-2, A-4	0	0	85-100	75-100	50-85	30-45	15-25	NP-10
	7-34	Clay loam, sandy clay loam, gravelly loam	SC, CL	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SM, SC-SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HdA:												
Haney-----------	0-7	Loam	CL-ML, CL	A-4, A-6	0	0	85-100	75-100	70-90	50-80	20-30	5-15
	7-34	Clay loam, sandy clay loam, gravelly loam	CL, SC	A-6, A-2	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HdB:												
Haney-----------	0-7	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	50-80	20-30	5-15
	7-34	Clay loam, sandy clay loam, gravelly loam	CL, SC	A-2, A-6	0	0	80-100	50-100	40-75	20-70	30-40	10-20
	34-60	Gravelly loamy sand, sand, sandy loam	SC-SM, SC, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
HeA:												
Haskins---------	0-6	Fine sandy loam	SC, SC-SM	A-2, A-4	0	0	95-100	85-100	55-85	25-50	20-30	5-10
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby-----------	0-8	Fine sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HeB:												
Haskins---------	0-6	Fine sandy loam	SC, SC-SM	A-2, A-4	0	0	95-100	85-100	55-85	25-50	20-30	5-10
	6-36	Sandy clay loam, clay loam, sandy loam	CL, SC	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby-----------	0-8	Fine sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	85-100	75-100	50-90	30-50	15-30	NP-10
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC-SM, SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HfA:												
Haskins---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	70-100	55-75	20-40	5-15
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HfA:												
Digby-----------	0-8	Loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SM, SC-SM, SC	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HfB:												
Haskins---------	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	70-100	55-75	20-40	5-15
	6-36	Sandy clay loam, clay loam, sandy loam	SC, CL	A-2, A-6	0	0	85-100	70-100	55-85	30-65	25-40	10-20
	36-42	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	42-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Digby-----------	0-8	Loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	85-100	75-100	70-90	40-70	20-35	5-15
	8-34	Clay loam, sandy clay loam, loam	SC, CL	A-2, A-6	0	0	85-100	75-100	65-80	20-60	20-40	5-20
	34-37	Gravelly loamy sand, very gravelly sand, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2	0	0-5	80-100	45-95	30-60	5-20	10-25	NP-10
	37-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HgA:												
Hoytville-------	0-9	Clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-52	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	52-60	Clay loam, silty clay loam, clay	CL, CH	A-7, A-6	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
HhA:												
Hoytville-------	0-9	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-41	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	41-60	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-30
HvA:												
Hoytville-------	0-8	Silty clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-60	25-35
	8-41	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	41-60	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	60-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-30
HwA:												
Hoytville-------	0-7	Clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	80-90	45-60	25-35
	7-18	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	20-35
	18-44	Silty clay loam, clay, silty clay, clay loam	CL, CH	A-7, A-6	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	44-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HyA:												
Hoytville-------	0-9	Clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-48	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	85-100	80-100	70-95	45-60	25-35
	48-57	Clay loam, silty clay loam, clay	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	70-95	40-60	20-35
	57-80	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban land.												
JoA:												
Joliet----------	0-6	Silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	75-100	70-100	60-85	35-45	15-25
	6-16	Silty clay loam, silty clay, clay loam	CL	A-6, A-7	0-1	0-10	90-100	75-100	65-95	50-90	35-50	15-30
	16-18	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
KeA:												
Kibbie----------	0-16	Loamy fine sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	SC, CL	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC-SM, ML, CL-ML, CL, SC, SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
KfA:												
Kibbie----------	0-10	Fine sandy loam	SC-SM, SM, CL-ML, CL, SC, ML	A-4, A-2	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SC, SC-SM, SM	A-4, A-2	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	CL-ML, ML, CL, SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
KfB:												
Kibbie----------	0-10	Fine sandy loam	SC, SM, SC-SM, ML, CL, CL-ML	A-2, A-4	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SM, SC, SC-SM	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	CL, SC	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC, CL-ML, SC-SM, ML, CL, SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
KkA:												
Kibbie----------	0-10	Fine sandy loam	CL-ML, SC-SM, CL, SM, ML, SC	A-2, A-4	0	0	100	95-100	75-95	30-60	15-30	NP-10
	10-16	Loamy fine sand	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	70-95	30-45	0-25	NP-10
	16-36	Loam, silty clay loam, fine sandy loam	SC, CL	A-6, A-7	0	0	100	95-100	70-95	35-90	25-45	10-20
	36-60	Stratified fine sand to silt loam	SC, ML, CL, SM, CL-ML, SC-SM	A-2, A-4	0	0	100	95-100	70-95	30-80	15-30	NP-10
Urban land.												
LbB:												
Landes----------	0-20	Loamy fine sand	SM, SC-SM	A-2	0	0	100	85-100	70-95	10-30	10-25	NP-10
	20-32	Loamy fine sand, very fine sandy loam, loam	SC-SM, SM, ML, CL-ML, SC, CL	A-2, A-4	0	0	100	85-100	70-90	15-60	10-25	NP-10
	32-80	Stratified fine sand to fine sandy loam	SC, SP-SM, SM, SC-SM	A-2, A-4	0	0	100	85-100	70-85	10-60	10-30	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
LdA:												
Latty-----------	0-10	Silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	45-60	20-35
	10-41	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	41-61	Silty clay loam, silty clay, clay	CL, CH	A-6, A-7	0	0	100	100	90-100	85-100	40-70	20-40
	61-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-30
LgA:												
Latty-----------	0-8	Silty clay	CL, CH	A-7	0	0	100	100	90-100	85-100	45-60	20-35
	8-39	Silty clay, clay	CH	A-7	0	0	100	100	90-100	85-100	50-70	25-40
	39-76	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0	0	100	100	90-100	85-100	40-70	20-40
	76-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	65-95	35-50	15-30
Urban land.												
MbA:												
Millgrove-------	0-8	Loam	CL, SC	A-6	0	0	85-100	75-100	60-95	35-75	25-40	10-20
	8-21	Loam, clay loam, sandy clay loam	CL, SC	A-6, A-7, A-2	0	0	85-100	75-100	60-95	20-75	25-45	10-25
	21-43	Sandy loam, gravelly sandy loam	SM, SC, CL, CL-ML, ML, SC-SM	A-2, A-4	0	0	85-100	45-100	30-75	10-55	15-25	NP-10
	43-60	Gravelly loamy sand	ML, SM, SC-SM, SC, CL-ML, CL	A-2, A-4	0	0-5	60-100	45-100	30-70	10-55	15-25	NP-10
McA:												
Mermill---------	0-8	Fine sandy loam	SC, CL, CL-ML, SC-SM	A-4	0	0	95-100	85-100	65-85	35-55	20-30	5-10
	8-38	Sandy clay loam, clay loam, loam	SC, CL, SC-SM, CL-ML	A-5, A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	38-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MdA:												
Mermill---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-28	Clay loam, sandy clay loam, loam	CL-ML, SC, CL, SC-SM	A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	28-57	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	57-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
MeA:												
Mermill---------	0-8	Sandy clay loam	CL, SC	A-6, A-7	0	0	95-100	85-100	70-90	35-55	30-45	10-20
	8-38	Sandy clay loam, clay loam, loam	CL-ML, SC, SC-SM, CL	A-5, A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	38-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
MfA:												
Mermill---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-35	Clay loam, sandy clay loam, loam	SC-SM, CL, SC, CL-ML	A-4, A-6, A-7, A-5	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	35-46	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	46-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MfA:												
Aurand----------	0-11	Loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-23	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	90-100	70-100	65-95	30-85	30-45	10-25
	23-29	Clay loam, silty clay loam, sandy loam	CL-ML, SC-SM, CL, SC	A-2, A-4, A-6, A-7, A-5	0	0-1	90-100	70-100	60-95	30-85	20-45	5-20
	29-51	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
	51-80	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
MgA:												
Mermill---------	0-9	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-32	Clay loam, sandy clay loam, loam	CL-ML, CL, SC-SM, SC	A-4, A-6, A-7, A-5	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	32-47	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
	47-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	65-95	35-50	15-25
Urban land.												
MhA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CL, CH	A-7, A-6	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MkA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
MmA:												
Millsdale-------	0-7	Silty clay loam	CL	A-6, A-7	0	0	90-100	75-100	70-100	65-95	35-45	15-25
	7-32	Clay, silty clay, clay loam, silty clay loam	CL, CH	A-6, A-7	0	0-5	85-100	75-100	70-100	55-95	40-55	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Urban land.												
MnA:												
Milton----------	0-6	Loam	SC-SM, SC, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	45-75	20-40	5-20
	6-11	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	80-100	75-100	50-80	30-50	10-25
	11-26	Clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0-5	95-100	80-100	70-95	50-90	35-55	15-30
	26-28	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
MnB:												
Milton----------	0-6	Loam	SC, SC-SM, CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	45-75	20-40	5-20
	6-11	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	80-100	75-100	50-80	30-50	10-25
	11-26	Clay, silty clay, clay loam	CH, CL	A-6, A-7	0	0-5	95-100	80-100	70-95	50-90	35-55	15-30
	26-28	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
NmA:												
Nappanee--------	0-8	Sandy loam	SC, CL-ML, CL, SC-SM	A-2, A-4	0	0-5	95-100	90-100	50-90	30-55	20-30	5-10
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NmB:												
Nappanee--------	0-8	Sandy loam	CL-ML, CL, SC-SM, SC	A-2, A-4	0	0-5	95-100	90-100	50-90	30-55	20-30	5-10
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnA:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnB:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NnB2:												
Nappanee--------	0-8	Loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
NpA:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NpB:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NpB2:												
Nappanee--------	0-8	Silty clay loam	CL	A-7	0	0-5	95-100	90-100	85-100	70-95	40-50	20-25
	8-28	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
NsA:												
Nappanee--------	0-8	Silty clay loam	CL	A-6	0	0-5	95-100	90-100	85-100	55-90	30-40	10-15
	8-28	Silty clay, clay	CL, CH	A-7	0	0-5	95-100	90-100	85-100	70-95	45-70	25-40
	28-60	Silty clay, clay, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban land.												

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
OsB:												
Oshtemo---------	0-11	Sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	95-100	75-100	55-70	25-40	0-25	NP-10
	11-34	Sandy loam, sandy clay loam, gravelly sandy loam	SC, SC-SM	A-2, A-4, A-1, A-6	0	0	95-100	55-100	35-85	15-50	20-30	5-15
	34-44	Loamy sand, sandy loam, gravelly sandy loam	SC, SP-SM, SC-SM, SM	A-2, A-1	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	44-75	Loamy sand, loamy coarse sand, gravelly loamy coarse sand	SM, SP-SM, SC-SM	A-1, A-2, A-3	0	0-5	65-95	55-95	20-60	5-15	0-25	NP-5
	75-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	65-95	35-50	15-25
OtA:												
Ottokee---------	0-11	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
OtB:												
Ottokee----------	0-11	Loamy fine sand	SC-SM, SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
OzB:												
Ottokee----------	0-11	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	11-47	Loamy fine sand, fine sand, loamy sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	47-60	Loamy fine sand, fine sand, sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	65-90	5-35	0-20	NP-5
Spinks----------	0-7	Loamy fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-48	Loamy fine sand, sand, fine sand	SC-SM, SP-SM, SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	48-60	Fine sand, loamy fine sand, sand	SM, SP-SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
Urban land.												
Pt.												
Pits, quarry												

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RbA:												
Randolph--------	0-10	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CH, CL	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
RbB:												
Randolph--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
RdA:												
Randolph--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CH, CL	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
ReA:												
Randolph--------	0-10	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	50-75	25-35	5-15
	10-32	Silty clay loam, clay loam, silty clay	CL, CH	A-6, A-7	0	0-5	85-100	75-100	75-90	55-90	40-60	20-35
	32-34	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Urban land.												

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RfA:												
Rimer	0-8	Loamy fine sand	SM, SC-SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC, SC-SM, SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Tedrow	0-14	Loamy fine sand	SM, SC-SM, SC	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC, SC-SM, SW-SM, SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
RfB:												
Rimer	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC-SM, SM, SC	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RfB:												
Tedrow----------	0-14	Loamy fine sand	SC-SM, SC, SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC, SW-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
RgA:												
Rimer-----------	0-8	Loamy fine sand	SC, SM, SC-SM	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-25	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	25-27	Sandy loam, fine sandy loam	SC, SC-SM, SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	27-32	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	32-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Tedrow----------	0-14	Loamy fine sand	SC, SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-10
	14-34	Fine sand, loamy fine sand, sand	SC-SM, SC, SM, SW-SM	A-2, A-3	0	0	100	95-100	60-80	5-35	0-20	NP-10
	34-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban land.												
RhA:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-100	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
RhB:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-100	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
RkA:												
Ritchey---------	0-8	Loam	CL	A-6	0	0	95-100	85-100	80-90	50-75	25-40	10-15
	8-16	Clay loam, loam	CL	A-6	0-1	0-5	90-100	85-100	70-100	50-85	30-45	10-20
	16-18	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
RmA:												
Risingsun-------	0-9	Muck	PT	A-8	0	0	0	0	0	0	---	---
	9-11	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	80-100	30-45	10-25
	11-26	Loamy sand, fine sandy loam, loamy fine sand	SM, SC-SM, SC	A-4, A-2	0	0	100	85-100	65-85	20-45	0-30	NP-10
	26-43	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	43-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
Rollersville----	0-12	Fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	90-100	50-85	20-45	0-30	NP-10
	12-26	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM, SC	A-2	0	0	100	85-100	65-85	10-35	0-30	NP-10
	26-49	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	49-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RnA:												
Rollersville----	0-11	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0	0	100	90-100	50-85	20-45	0-30	NP-10
	11-38	Fine sand, loamy fine sand, sand	SP-SM, SC-SM, SC, SM	A-2	0	0	100	85-100	65-85	10-35	0-30	NP-10
	38-52	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	52-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
Risingsun-------	0-9	Muck	PT	A-8	0	0	0	0	0	0	---	---
	9-14	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	80-100	30-45	10-25
	14-27	Loamy sand, fine sandy loam, loamy fine sand	SC-SM, SC, SM	A-4, A-2	0	0	100	85-100	65-85	20-45	0-30	NP-10
	27-41	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
	41-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-2	90-100	90-100	80-100	65-95	35-45	15-20
RsA:												
Rossburg--------	0-18	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	80-100	60-90	20-35	5-15
	18-36	Loam, silt loam, fine sandy loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	70-95	50-80	20-35	5-15
	36-80	Stratified loamy fine sand to fine sandy loam to loam	CL, ML, SM, SC-SM, CL-ML, SC	A-2, A-4	0	0	80-100	50-100	45-90	25-70	15-25	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
SdA:												
Seward----------	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-24	Loamy fine sand, fine sand, loamy sand	SC, SM, SC-SM	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	24-40	Fine sandy loam, sandy loam	SC, SM, SC-SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	40-45	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	45-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Ottokee---------	0-9	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	9-46	Loamy fine sand, fine sand, loamy sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	46-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
SdB:												
Seward----------	0-8	Loamy fine sand	SC-SM, SM, SC	A-1, A-2, A-4	0	0	100	95-100	45-80	15-40	0-25	NP-10
	8-24	Loamy fine sand, fine sand, loamy sand	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	75-90	20-40	0-25	NP-10
	24-40	Fine sandy loam, sandy loam	SC, SM, SC-SM	A-4, A-6	0	0	100	95-100	60-80	35-45	15-30	NP-15
	40-45	Clay loam, silty clay, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
	45-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SdB:												
Ottokee---------	0-9	Loamy fine sand	SM, SC-SM	A-2, A-4	0	0	100	90-100	55-80	15-40	0-20	NP-5
	9-46	Loamy fine sand, fine sand, loamy sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	90-100	65-90	5-35	0-20	NP-5
	46-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
SeA:												
Shawtown--------	0-9	Loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-53	Loam, clay loam, gravelly loam	SC, CL-ML, SC-SM, CL	A-1, A-2, A-4, A-6, A-7, A-5	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	53-66	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC, SM, SC-SM, SP-SM	A-1, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	66-80	Clay loam, silty clay loam, silt loam	CL, SC	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30
SeB:												
Shawtown--------	0-9	Loam	SC-SM, CL, SC, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-53	Loam, clay loam, gravelly loam	SC-SM, CL-ML, SC, CL	A-1, A-2, A-4, A-6, A-7, A-5	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	53-66	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC-SM, SP-SM, SC, SM	A-1, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	66-80	Clay loam, silty clay loam, silt loam	SC, CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SgA:												
Shoals----------	0-8	Loam	CL	A-6	0	0	100	95-100	90-100	50-75	25-35	10-15
	8-31	Clay loam, loam, silt loam	CL	A-7, A-6	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	CL-ML, SC, SC-SM, CL	A-4, A-2, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
ShA:												
Shoals----------	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	90-100	90-100	65-90	25-40	5-20
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	SC, CL-ML, CL, SC-SM	A-2, A-4, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
SkA:												
Shoals----------	0-8	Silty clay loam	CL	A-6	0	0	100	95-100	95-100	80-90	30-40	15-20
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-60	Loam, sandy loam, silt loam	CL-ML, CL, SC-SM, SC	A-2, A-4, A-6	0	0-3	90-100	75-100	60-80	30-70	20-35	5-15
SmA:												
Shoals----------	0-8	Loam	CL	A-6	0	0	100	95-100	90-100	50-75	25-35	10-15
	8-31	Clay loam, loam, silt loam	CL	A-6, A-7	0	0	100	95-100	90-100	55-85	25-45	10-20
	31-33	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Sloan-----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	10-24	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	24-26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SnA:												
Sloan-----------	0-10	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	90-100	85-100	70-95	25-40	5-15
	10-26	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	26-60	Stratified loam to silty clay loam to gravelly sandy loam	CL, CL-ML, SC-SM, SC	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20
SoA:												
Sloan-----------	0-11	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	11-58	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	58-80	Stratified loam to silty clay loam to gravelly sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20
SpA:												
Sloan-----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	10-26	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	10-20
	26-60	Stratified loam to silty clay loam to gravelly sandy loam	SC, CL, CL-ML, SC-SM	A-4, A-6, A-2	0	0	85-100	50-100	45-95	30-90	20-40	5-20
SrB:												
Spinks----------	0-7	Fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SrC:												
Spinks----------	0-7	Fine sand	SC-SM, SM, SP-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SrD:												
Spinks----------	0-7	Fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SsB:												
Spinks----------	0-7	Loamy fine sand	SP-SM, SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SC-SM, SP-SM, SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
SsC:												
Spinks----------	0-7	Loamy fine sand	SM, SP-SM, SC-SM	A-2	0	0	95-100	90-100	55-80	10-30	0-20	NP-5
	7-38	Loamy fine sand, sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5
	38-60	Fine sand, loamy fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	95-100	90-100	65-90	5-35	0-20	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
StB:												
St. Clair-------	0-8	Loam	CL	A-6	0	0-5	95-100	75-100	70-100	50-80	30-40	10-15
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
StC2:												
St. Clair-------	0-8	Loam	CL	A-6	0	0-5	95-100	75-100	70-100	50-80	30-40	10-15
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuB2:												
St. Clair-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuC2:												
St. Clair-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
SuD2:												
St. Clair-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
SuE2:												
St. Clair-------	0-8	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	70-95	35-50	15-25
	8-18	Clay, silty clay	CL, CH	A-7	0	0-5	95-100	75-100	75-100	70-95	40-65	20-40
	18-42	Silty clay loam, clay loam, clay	CL	A-7, A-6	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
	42-60	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	95-100	75-100	70-100	65-95	35-50	15-25
TeA:												
Tedrow----------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SP-SM, SM, SC-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5
TeB:												
Tedrow----------	0-8	Loamy fine sand	SM, SC-SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SC-SM, SM, SP-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
TfA:												
Tedrow----------	0-8	Loamy fine sand	SC-SM, SM	A-2	0	0	100	95-100	60-80	20-35	0-20	NP-5
	8-47	Loamy fine sand, loamy sand, fine sand	SP-SM, SC-SM, SM	A-2, A-3	0	0	100	95-100	35-90	5-35	0-20	NP-5
	47-60	Fine sand, sand	SM, SC-SM, SP-SM	A-2, A-3	0	0	100	95-100	50-90	5-35	0-20	NP-5
Urban land.												
TpA:												
Toledo----------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-100	35-50	15-25
	9-57	Silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	80-100	45-65	20-40
	57-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	80-100	40-65	20-40
TuA:												
Toledo----------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-100	35-50	15-25
	9-57	Silty clay, clay	CL, CH	A-7	0	0	100	100	95-100	80-100	45-65	20-40
	57-60	Silty clay, clay, silty clay loam	CL, CH	A-7	0	0	100	100	95-100	80-100	40-65	20-40
Urban land.												
UcA, UcE. Udorthents												
Ur. Urban land												
W. Water												
WbA:												
Wabasha---------	0-9	Silty clay	CL, CH	A-7	0	0	100	95-100	90-100	85-100	45-55	25-30
	9-50	Silty clay, clay	CL, CH	A-7	0	0	100	90-100	85-100	80-100	45-65	25-35
	50-60	Silty clay loam, clay, silty clay	CH, CL	A-7	0	0	100	90-100	85-100	80-100	40-65	20-35

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WmA:												
Wauseon---------	0-11	Loamy fine sand	CL-ML, ML, SM, SC-SM, SC, CL	A-2, A-4	0	0	100	95-100	50-85	20-55	0-25	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
WnA:												
Wauseon---------	0-8	Fine sandy loam	CL-ML, SM, ML, CL, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	8-34	Loamy fine sand, fine sandy loam, sandy loam	SC-SM, SC, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	34-59	Loamy fine sand, fine sandy loam, sandy loam	SP, SM, SP-SM, SC-SM	A-2, A-3	0	0	100	95-100	50-70	0-35	0-20	NP-5
	59-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
WyA:												
Wauseon---------	0-11	Fine sandy loam	CL-ML, ML, CL, SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SM, SC-SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WzA:												
Wauseon---------	0-11	Fine sandy loam	SC, SC-SM, ML, SM, CL, CL-ML	A-2, A-4	0	0	100	95-100	60-85	30-55	0-30	NP-10
	11-30	Loamy fine sand, fine sandy loam, sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	100	95-100	65-95	20-45	0-30	NP-10
	30-60	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	65-95	35-50	15-25
Urban land.												

Table 22.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Shrink-swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group
	In	Pct	g/cc	In/hr	In/in					
AgA:										
Alvada----------	0-10	18-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	10-39	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	39-46	18-32	1.40-1.60	0.60-2.00	0.08-0.15	Low	.24	.28		
	46-50	5-18	1.50-1.70	2.00-6.00	0.08-0.12	Low	.24	.28		
	50-80	22-35	1.60-1.80	0.06-0.60	0.05-0.10	Moderate	.32	.32		
AmA:										
Aurand----------	0-10	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.24	4	3
	10-30	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	30-38	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	38-59	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	59-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
AnA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-29	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	29-33	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	33-48	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	48-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
AsA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-25	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	25-34	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	34-51	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	51-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land.										
BeB:										
Belmore---------	0-8	8-15	1.20-1.45	2.00-6.00	0.12-0.15	Low	.24	.28	5	3
	8-40	15-30	1.35-1.60	2.00-6.00	0.14-0.18	Low	.28	.32		
	40-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
BfB:										
Belmore---------	0-8	10-24	1.30-1.45	0.60-2.00	0.14-0.18	Low	.32	.37	5	5
	8-40	15-30	1.35-1.60	2.00-6.00	0.14-0.18	Low	.28	.32		
	40-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
CaA:										
Castalia--------	0-7	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.20	.64	2	8
	7-21	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	21-23	---	---	0.00-0.60	---	---	---	---		
CbB:										
Castalia--------	0-9	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.15	.37	2	8
	9-16	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	16-22	12-20	1.30-1.40	6.00-20.00	0.02-0.09	Low	.10	.55		
	22-24	---	---	0.00-0.60	---	---	---	---		
Marblehead------	0-6	5-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.28	.37	1	5
	6-8	---	---	0.00-0.60	---	---	---	---		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
CcA:										
Colwood---------	0-8	2-18	1.30-1.60	2.00-6.00	0.16-0.20	Low	.20	.20	5	3
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
CdA:										
Colwood---------	0-8	7-26	1.30-1.60	0.60-6.00	0.20-0.24	Low	.28	.28	5	5
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
CtA:										
Colwood---------	0-8	7-26	1.30-1.60	0.60-6.00	0.20-0.24	Low	.28	.28	5	5
	8-38	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	38-60	0-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
Urban land.										
CvA:										
Cygnet----------	0-11	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.24	.28	4	5
	11-30	18-35	1.25-1.60	0.60-2.00	0.14-0.18	Low	.28	.32		
	30-53	5-25	1.40-1.60	2.00-6.00	0.12-0.16	Low	.24	.28		
	53-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
CxB:										
Castalia--------	0-9	12-20	1.20-1.35	6.00-20.00	0.04-0.12	Low	.15	.37	2	8
	9-16	12-20	1.30-1.40	6.00-20.00	0.03-0.13	Low	.10	.43		
	16-22	12-20	1.30-1.40	6.00-20.00	0.02-0.09	Low	.10	.55		
	22-24	---	---	0.00-0.60	---	---	---	---		
Marblehead------	0-6	5-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.28	.37	1	5
	6-8	---	---	0.00-0.60	---	---	---	---		
Urban land.										
DgA:										
Digby-----------	0-7	7-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.24	.28	4	3
	7-32	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
DhA:										
Digby-----------	0-7	12-20	1.20-1.40	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-32	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
DrA:										
Dunbridge-------	0-8	6-12	1.35-1.50	2.00-6.00	0.16-0.18	Low	.17	.20	2	3
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
DsA:										
Dunbridge-------	0-8	4-8	1.40-1.60	6.00-20.00	0.10-0.13	Low	.17	.20	2	2
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
Spinks----------	0-9	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	3	2
	9-51	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	51-53	---	---	0.00-0.60	---	---	---	---		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
DsB:										
Dunbridge-------	0-8	4-8	1.40-1.60	6.00-20.00	0.10-0.13	Low	.17	.20	2	2
	8-14	4-12	1.40-1.60	2.00-20.00	0.08-0.12	Low	.32	.55		
	14-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
Spinks----------	0-9	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	3	2
	9-51	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	51-53	---	---	0.00-0.60	---	---	---	---		
EaA:										
Eel-------------	0-8	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	5	6
	8-38	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	38-60	8-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
EmA:										
Eel-------------	0-8	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	5	6
	8-38	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	38-60	8-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
EnA:										
Eel-------------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	2	6
	9-34	20-32	1.30-1.50	0.60-2.00	0.17-0.22	Low	.32	.32		
	34-36	---	---	0.00-0.60	---	---	---	---		
FcA:										
Flatrock--------	0-11	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	11-52	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.32	.32		
	52-80	15-35	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		
FuA:										
Fulton----------	0-9	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	9-32	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	32-47	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	47-68	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	68-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
FuB:										
Fulton----------	0-7	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	7-32	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	32-41	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	41-63	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	63-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
FzA:										
Fulton----------	0-8	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.43	.43	5	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	28-40	35-45	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	40-64	27-35	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
	64-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land.										
GmA:										
Genesee---------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-42	18-27	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37		
	42-60	10-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		
GnA:										
Genesee---------	0-9	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-42	18-27	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37		
	42-60	10-25	1.30-1.50	0.60-6.00	0.19-0.21	Low	.28	.32		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
GpA:										
Granby----------	0-11	2-14	1.20-1.60	6.00-20.00	0.10-0.12	Low	.17	.17	5	2
	11-33	0-14	1.45-1.65	6.00-20.00	0.05-0.12	Low	.15	.15		
	33-74	0-10	1.45-1.65	6.00-20.00	0.05-0.09	Low	.15	.15		
	74-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HaA:										
Haney-----------	0-7	7-18	1.40-1.60	2.00-6.00	0.10-0.17	Low	.32	.37	4	3
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HaB:										
Haney-----------	0-7	7-18	1.40-1.60	2.00-6.00	0.10-0.17	Low	.32	.37	4	3
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HdA:										
Haney-----------	0-7	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HdB:										
Haney-----------	0-7	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.32	.37	4	5
	7-34	20-35	1.25-1.60	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-60	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
HeA:										
Haskins---------	0-6	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby-----------	0-8	7-18	1.20-1.40	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HeB:										
Haskins---------	0-6	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby-----------	0-8	7-18	1.20-1.40	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HfA:										
Haskins---------	0-6	12-20	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby-----------	0-8	12-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	.32	.37	4	5
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors			Wind erodi- bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in					
HfB:										
Haskins---------	0-6	12-20	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	6-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-42	27-42	1.60-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	42-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Digby-----------	0-8	12-20	1.20-1.40	0.60-2.00	0.18-0.22	Low	.32	.37	4	5
	8-34	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	34-37	3-15	1.25-1.55	6.00-20.00	0.02-0.09	Low	.15	.20		
	37-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HgA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.24	.24	5	6
	9-52	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	52-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HhA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.28	.28	5	6
	9-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HvA:										
Hoytville-------	0-8	40-48	1.30-1.55	0.20-0.60	0.10-0.14	Moderate	.28	.28	5	4
	8-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HwA:										
Hoytville-------	0-7	40-45	1.35-1.55	0.20-0.60	0.11-0.13	Moderate	.28	.28	5	4
	7-18	40-55	1.35-1.60	0.20-0.60	0.09-0.12	Moderate	.28	.32		
	18-44	30-45	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	44-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HyA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.24	.24	5	6
	9-48	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	48-57	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	57-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land.										
JoA:										
Joliet----------	0-6	27-35	1.10-1.30	0.60-2.00	0.15-0.23	Moderate	.28	.28	1	6
	6-16	27-45	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
KeA:										
Kibbie----------	0-16	0-15	1.40-1.65	2.00-6.00	0.13-0.18	Low	.17	.17	5	2
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
KfA:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
KfB:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
KkA:										
Kibbie----------	0-10	2-20	1.40-1.65	0.60-2.00	0.16-0.20	Low	.20	.20	5	3
	10-16	5-15	1.40-1.65	2.00-6.00	0.06-0.11	Low	.17	.17		
	16-36	18-35	1.40-1.65	0.60-2.00	0.17-0.22	Low	.32	.32		
	36-60	2-18	1.40-1.70	0.60-2.00	0.12-0.22	Low	.32	.32		
Urban land.										
LbB:										
Landes----------	0-20	5-10	1.40-1.65	0.60-6.00	0.13-0.18	Low	.17	.17	5	2
	20-32	5-18	1.60-1.70	2.00-6.00	0.10-0.15	Low	.32	.32		
	32-80	5-18	1.60-1.80	6.00-20.00	0.05-0.15	Low	.20	.20		
LdA:										
Latty-----------	0-10	40-55	1.30-1.50	0.06-0.20	0.11-0.14	Moderate	.28	.28	5	4
	10-41	45-60	1.35-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	41-61	35-60	1.40-1.75	0.01-0.20	0.08-0.12	Moderate	.28	.28		
	61-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
LgA:										
Latty-----------	0-8	40-55	1.30-1.50	0.06-0.20	0.11-0.14	Moderate	.28	.28	5	4
	8-39	45-60	1.35-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	39-76	35-60	1.40-1.75	0.01-0.20	0.08-0.12	Moderate	.28	.28		
	76-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land.										
MbA:										
Millgrove-------	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	8-21	18-35	1.40-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	21-43	7-18	1.25-1.60	2.00-6.00	0.10-0.16	Low	.28	.43		
	43-60	3-15	1.25-1.60	2.00-6.00	0.08-0.12	Low	.28	.55		
McA:										
Mermill---------	0-8	12-20	1.30-1.45	2.00-6.00	0.14-0.18	Low	.24	.24	4	3
	8-38	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	38-60	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MdA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-28	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	28-57	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	57-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MeA:										
Mermill---------	0-8	20-30	1.35-1.55	0.60-2.00	0.16-0.20	Low	.32	.32	4	5
	8-38	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	38-60	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MfA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-35	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	35-46	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	46-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
MfA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-23	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	23-29	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	29-51	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	51-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
MgA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.32	.32	4	6
	9-32	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	32-47	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	47-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
Urban land.										
MhA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	6
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
MkA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	8
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
MmA:										
Millsdale-------	0-7	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	6
	7-32	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
Urban land.										
MnA:										
Milton----------	0-6	13-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	6-11	20-35	1.40-1.65	0.20-2.00	0.14-0.20	Low	.32	.37		
	11-26	35-50	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	26-28	---	---	0.00-0.60	---	---	---	---		
MnB:										
Milton----------	0-6	13-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	6-11	20-35	1.40-1.65	0.20-2.00	0.14-0.20	Low	.32	.37		
	11-26	35-50	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	26-28	---	---	0.00-0.60	---	---	---	---		
NmA:										
Nappanee--------	0-8	10-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.32	.32	3	3
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NmB:										
Nappanee--------	0-8	10-18	1.20-1.40	2.00-6.00	0.11-0.17	Low	.32	.32	3	3
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NnA:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
NnB:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NnB2:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NpA:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NpB:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NpB2:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
NsA:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	6
	8-28	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	28-60	27-42	1.60-1.90	0.01-0.20	0.01-0.12	Moderate	.32	.37		
Urban land.										
OsB:										
Oshtemo---------	0-11	5-15	1.15-1.60	2.00-6.00	0.12-0.15	Low	.24	.24	5	3
	11-34	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	34-44	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	44-75	5-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
	75-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
OtA:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
OtB:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
OzB:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-47	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
OzB:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.15	.17	5	2
	7-48	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	48-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
Urban land.										
Pt.										
Pits, quarry										
RbA:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
RbB:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
RdA:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	8
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
ReA:										
Randolph--------	0-10	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	10-32	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	32-34	---	---	0.00-0.60	---	---	---	---		
Urban land.										
RfA:										
Rimer-----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Tedrow----------	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RfB:										
Rimer-----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Tedrow----------	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RgA:										
Rimer-----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-25	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	25-27	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	27-32	30-45	1.60-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	32-60	27-42	1.60-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
RgA:										
Tedrow----------	0-14	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	4	2
	14-34	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	34-60	27-42	1.70-1.90	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Urban land.										
RhA:										
Ritchey---------	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	6
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
RhB:										
Ritchey---------	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	6
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
RkA:										
Ritchey---------	0-8	18-27	1.20-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	1	8
	8-16	25-35	1.35-1.60	0.60-2.00	0.14-0.20	Moderate	.37	.37		
	16-18	---	---	0.00-0.60	---	---	---	---		
RmA:										
Risingsun-------	0-9	0-0	0.20-0.80	0.20-6.00	0.35-0.45	Low	---	---	4	2
	9-11	20-35	1.30-1.65	0.20-2.00	0.18-0.24	Low	.28	.28		
	11-26	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	26-43	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	43-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Rollersville----	0-12	2-15	1.40-1.60	2.00-6.00	0.10-0.14	Low	.17	.17	5	3
	12-26	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	26-49	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	49-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RnA:										
Rollersville----	0-11	2-15	1.40-1.60	2.00-6.00	0.10-0.14	Low	.17	.17	5	3
	11-38	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	38-52	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	52-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
Risingsun-------	0-9	0-0	0.20-0.80	0.20-6.00	0.35-0.45	Low	---	---	4	2
	9-14	20-35	1.30-1.65	0.20-2.00	0.18-0.24	Low	.28	.28		
	14-27	1-15	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	27-41	27-35	1.60-1.75	0.06-0.60	0.07-0.10	Moderate	.32	.37		
	41-80	27-35	1.80-2.00	0.01-0.20	0.01-0.10	Moderate	.32	.37		
RsA:										
Rossburg--------	0-18	13-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	18-36	18-27	1.25-1.60	0.60-2.00	0.15-0.22	Low	.37	.37		
	36-80	5-15	1.30-1.60	2.00-6.00	0.05-0.15	Low	.24	.32		
SdA:										
Seward----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-24	2-15	1.40-1.60	6.00-20.00	0.06-0.12	Low	.17	.17		
	24-40	5-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	40-45	27-42	1.60-1.80	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	45-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Ottokee---------	0-9	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	4	2
	9-46	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	46-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
SdB:										
Seward----------	0-8	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	8-24	2-15	1.40-1.60	6.00-20.00	0.06-0.12	Low	.17	.17		
	24-40	5-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	40-45	27-42	1.60-1.80	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	45-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Ottokee---------	0-9	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	4	2
	9-46	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	46-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SeA:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.32	.37	4	5
	9-53	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	53-66	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	66-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SeB:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.28	.32	4	5
	9-53	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	53-66	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	66-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SgA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
ShA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
SkA:										
Shoals----------	0-8	27-32	1.30-1.60	0.60-2.00	0.21-0.23	Moderate	.20	.20	5	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-60	5-25	1.35-1.65	0.60-6.00	0.05-0.20	Low	.37	.37		
SmA:										
Shoals----------	0-8	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	2	6
	8-31	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Low	.32	.32		
	31-33	---	---	0.00-0.60	---	---	---	---		
Sloan-----------	0-10	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	3	6
	10-24	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	24-26	---	---	0.00-0.60	---	---	---	---		
SnA:										
Sloan-----------	0-10	15-27	1.20-1.40	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	10-26	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	26-60	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SoA:										
Sloan-----------	0-11	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	6
	11-58	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	58-80	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SpA:										
Sloan-----------	0-10	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	6
	10-26	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Low	.32	.37		
	26-60	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
SrB:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SrC:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SrD:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.10	.15	5	1
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SsB:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	5	2
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
SsC:										
Spinks----------	0-7	2-10	1.40-1.60	6.00-20.00	0.08-0.10	Low	.17	.17	5	2
	7-38	0-15	1.40-1.70	2.00-20.00	0.05-0.10	Low	.17	.17		
	38-60	3-15	1.40-1.70	2.00-6.00	0.04-0.08	Low	.17	.17		
StB:										
St. Clair-------	0-8	20-27	1.50-1.65	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
StC2:										
St. Clair-------	0-8	20-27	1.50-1.65	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuB2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuC2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuD2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SuE2:										
St. Clair-------	0-8	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	8-18	40-60	1.35-1.70	0.06-0.20	0.10-0.12	Moderate	.32	.37		
	18-42	35-55	1.60-1.75	0.06-0.20	0.09-0.11	Moderate	.32	.37		
	42-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
TeA:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
TeB:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
TfA:										
Tedrow----------	0-8	2-10	1.40-1.60	6.00-20.00	0.08-0.12	Low	.17	.17	5	2
	8-47	2-8	1.50-1.70	6.00-20.00	0.07-0.11	Low	.17	.17		
	47-60	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.17	.17		
Urban land.										
TpA:										
Toledo----------	0-9	27-40	1.40-1.60	0.20-0.60	0.17-0.23	Moderate	.28	.28	5	6
	9-57	40-60	1.40-1.70	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	57-60	35-60	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
TuA:										
Toledo----------	0-9	27-40	1.40-1.60	0.20-0.60	0.17-0.23	Moderate	.28	.28	5	6
	9-57	40-60	1.40-1.70	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	57-60	35-60	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
Urban land.										
UcA, UcE.										
Udorthents										
Ur.										
Urban land										
W.										
Water										
WbA:										
Wabasha---------	0-9	40-45	1.35-1.55	0.20-0.60	0.14-0.18	Moderate	.32	.32	5	4
	9-50	40-55	1.35-1.65	0.06-0.20	0.12-0.16	Moderate	.32	.32		
	50-60	35-55	1.50-1.65	0.06-0.20	0.12-0.17	Moderate	.32	.32		
WmA:										
Wauseon---------	0-11	3-14	1.40-1.65	2.00-6.00	0.10-0.14	Low	.17	.17	4	2
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WnA:										
Wauseon---------	0-8	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	8-34	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	34-59	1-8	1.50-1.70	6.00-20.00	0.05-0.07	Low	.15	.15		
	59-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WyA:										
Wauseon---------	0-11	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
WzA:										
Wauseon---------	0-11	7-18	1.40-1.60	2.00-6.00	0.13-0.18	Low	.20	.20	4	3
	11-30	5-18	1.40-1.75	2.00-6.00	0.06-0.16	Low	.20	.20		
	30-60	27-42	1.60-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land.										

Table 23.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
AgA:					
Alvada----------	0-10	5.6-7.3	3.0-8.0	13-32	0
	10-39	6.1-7.8	0.5-2.0	8.2-25	0-5
	39-46	6.1-7.8	0.5-1.0	8.2-21	0-15
	46-50	7.4-8.4	0.0-0.5	2.0-12	5-30
	50-80	7.4-8.4	0.0-0.5	8.8-22	15-30
AmA:					
Aurand----------	0-10	5.6-7.3	2.0-6.0	8.0-23	0
	10-30	5.6-7.8	0.5-2.0	8.2-25	0-5
	30-38	6.6-7.8	0.0-1.0	6.0-23	0-5
	38-59	7.4-8.4	0.0-0.5	11-26	0-20
	59-80	7.4-8.4	0.0-0.5	11-26	15-30
AnA:					
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-29	5.6-7.8	0.5-2.0	8.2-25	0-5
	29-33	6.6-7.8	0.0-1.0	6.0-23	0-5
	33-48	7.4-8.4	0.0-0.5	11-26	0-20
	48-80	7.4-8.4	0.0-0.5	11-26	15-30
AsA:					
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-25	5.6-7.8	0.5-2.0	8.2-25	0-5
	25-34	6.6-7.8	0.0-1.0	6.0-23	0-5
	34-51	7.4-8.4	0.0-0.5	11-26	0-20
	51-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land.					
BeB:					
Belmore---------	0-8	5.6-7.3	1.0-3.0	5.2-15	0
	8-40	5.6-7.3	0.0-0.5	6.0-19	0-5
	40-60	7.4-8.4	0.0-0.5	1.2-10	10-30
BfB:					
Belmore---------	0-8	5.6-7.3	1.0-3.0	6.0-20	0
	8-40	5.6-7.3	0.0-0.5	6.0-19	0-5
	40-60	7.4-8.4	0.0-0.5	1.2-10	10-30
CaA:					
Castalia--------	0-7	7.4-8.4	3.0-8.0	11-28	5-20
	7-21	7.4-8.4	0.5-2.0	5.8-16	40-60
	21-23	---	---	---	---
CbB:					
Castalia--------	0-9	7.4-8.4	3.0-8.0	11-28	5-20
	9-16	7.4-8.4	0.5-2.0	5.8-16	40-60
	16-22	7.4-8.4	0.5-2.0	5.8-16	40-60
	22-24	---	---	---	---
Marblehead------	0-6	6.1-8.4	3.0-12	8.0-36	0-25
	6-8	---	---	---	---
CcA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	6.8-27	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CdA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	8.8-32	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20
CtA:					
Colwood---------	0-8	5.6-7.8	3.0-8.0	8.8-32	0
	8-38	6.1-7.8	0.5-1.0	8.2-23	0-5
	38-60	7.4-8.4	0.0-0.5	0.0-8.2	0-20
Urban land.					
CvA:					
Cygnet----------	0-11	5.1-7.3	1.0-3.0	6.8-18	0
	11-30	5.1-7.3	0.5-1.0	8.2-23	0
	30-53	6.6-7.8	0.5-1.0	3.0-17	0-5
	53-80	7.4-8.4	0.0-0.5	11-26	20-35
CxB:					
Castalia--------	0-9	7.4-8.4	3.0-8.0	11-28	5-20
	9-16	7.4-8.4	0.5-2.0	5.8-16	40-60
	16-22	7.4-8.4	0.5-2.0	5.8-16	40-60
	22-24	---	---	---	---
Marblehead------	0-6	6.1-8.4	3.0-12	8.0-36	0-25
	6-8	---	---	---	---
Urban land.					
DgA:					
Digby-----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-32	4.5-7.8	0.5-1.0	8.2-23	0-5
	32-60	7.4-8.4	0.0-0.5	1.2-10	10-30
DhA:					
Digby-----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-32	4.5-7.8	0.5-1.0	8.2-23	0-5
	32-60	7.4-8.4	0.0-0.5	1.2-10	10-30
DrA:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	6.4-15	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---
DsA:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	5.6-13	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---
Spinks----------	0-9	5.1-7.3	0.5-2.0	1.8-13	0
	9-51	5.1-7.3	0.0-0.5	0.0-10	0
	51-53	---	---	---	---
DsB:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	5.6-13	0-5
	8-14	6.1-7.8	0.5-1.0	2.6-9.2	0-15
	14-25	6.1-7.8	0.0-0.5	7.2-19	0-15
	25-27	---	---	---	---

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
DsB:					
Spinks----------	0-9	5.1-7.3	0.5-2.0	1.8-13	0
	9-51	5.1-7.3	0.0-0.5	0.0-10	0
	51-53	---	---	---	---
EaA:					
Eel-------------	0-8	6.1-7.3	1.0-3.0	9.2-22	0
	8-38	6.1-7.8	0.5-1.0	9.0-21	0-5
	38-60	6.6-8.4	0.5-1.0	4.2-17	0-20
EmA:					
Eel-------------	0-8	6.1-7.3	1.0-3.0	9.2-22	0
	8-38	6.1-7.8	0.5-1.0	9.0-21	0-5
	38-60	6.6-8.4	0.5-1.0	4.2-17	0-20
EnA:					
Eel-------------	0-9	6.1-7.3	1.0-3.0	9.2-22	0
	9-34	6.1-7.8	0.5-1.0	9.0-21	0-5
	34-36	---	---	---	---
FcA:					
Flatrock--------	0-11	5.6-7.3	1.0-3.0	9.2-22	0
	11-52	6.1-7.8	0.5-1.0	8.2-23	0-5
	52-80	6.6-8.4	0.5-1.0	7.0-23	0-20
FuA:					
Fulton----------	0-9	5.6-7.3	2.0-3.0	15-30	0
	9-32	5.1-7.8	0.5-1.0	19-38	0-5
	32-47	6.6-8.4	0.0-0.5	14-28	5-20
	47-68	7.4-8.4	0.0-0.5	11-22	10-30
	68-80	7.4-8.4	0.0-0.5	11-26	20-30
FuB:					
Fulton----------	0-7	5.6-7.3	2.0-3.0	15-30	0
	7-32	5.1-7.8	0.5-1.0	19-38	0-5
	32-41	6.6-8.4	0.0-0.5	14-28	5-20
	41-63	7.4-8.4	0.0-0.5	11-22	10-30
	63-80	7.4-8.4	0.0-0.5	11-26	20-30
FzA:					
Fulton----------	0-8	5.6-7.3	2.0-3.0	15-30	0
	8-28	5.1-7.8	0.5-1.0	19-38	0-5
	28-40	6.6-8.4	0.0-0.5	14-28	5-20
	40-64	7.4-8.4	0.0-0.5	11-22	10-30
	64-80	7.4-8.4	0.0-0.5	11-26	20-30
Urban land.					
GmA:					
Genesee---------	0-9	6.1-7.8	1.0-3.0	9.2-22	0-4
	9-42	6.1-7.8	0.5-1.0	8.2-18	0-20
	42-60	6.6-8.4	0.5-1.0	5.0-17	0-20
GnA:					
Genesee---------	0-9	6.1-7.8	1.0-3.0	9.2-22	0-4
	9-42	6.1-7.8	0.5-1.0	8.2-18	0-20
	42-60	6.6-8.4	0.5-1.0	5.0-17	0-20
GpA:					
Granby----------	0-11	5.6-7.3	3.0-6.0	6.8-20	0
	11-33	5.6-7.8	0.5-1.0	1.0-10	0-5
	33-74	6.6-8.4	0.5-1.0	1.0-8.0	0-15
	74-80	7.4-8.4	0.0-0.5	11-26	15-30

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
HaA:					
Haney-----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HaB:					
Haney-----------	0-7	5.6-7.3	1.0-3.0	4.8-17	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HdA:					
Haney-----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HdB:					
Haney-----------	0-7	5.6-7.3	1.0-3.0	6.8-18	0
	7-34	4.5-7.8	0.5-1.0	9.0-23	0-5
	34-60	7.4-8.4	0.0-0.5	1.2-10	10-30
HeA:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.0-17	0
	6-36	5.1-7.3	0.5-1.0	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby-----------	0-8	5.6-7.3	1.0-3.0	4.8-17	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HeB:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.0-17	0
	6-36	5.1-7.3	0.5-1.0	8.2-23	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby-----------	0-8	5.6-7.3	1.0-3.0	4.8-17	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HfA:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.8-18	0
	6-36	5.1-7.3	0.0-0.5	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby-----------	0-8	5.6-7.3	1.0-3.0	6.8-18	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30
HfB:					
Haskins---------	0-6	5.1-7.3	1.0-3.0	6.8-18	0
	6-36	5.1-7.3	0.0-0.5	7.2-22	0
	36-42	6.1-7.8	0.0-0.5	11-26	0-5
	42-60	7.4-8.4	0.0-0.5	11-26	18-30
Digby-----------	0-8	5.6-7.3	1.0-3.0	6.8-18	0
	8-34	4.5-7.8	0.5-1.0	8.2-23	0-5
	34-37	7.4-8.4	0.0-0.5	1.2-10	10-30
	37-60	7.4-8.4	0.0-0.5	11-26	18-30

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
HgA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-52	6.1-8.4	0.5-1.0	17-35	0-15
	52-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HhA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-41	6.1-8.4	0.5-1.0	17-35	0-15
	41-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HvA:					
Hoytville-------	0-8	6.1-7.3	3.0-6.0	22-41	0
	8-41	6.1-8.4	0.5-1.0	17-35	0-15
	41-60	7.4-8.4	0.5-1.0	15-32	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HwA:					
Hoytville-------	0-7	6.6-7.8	3.0-6.0	22-39	0-15
	7-18	6.6-7.8	0.5-2.0	17-37	0-15
	18-44	7.4-8.4	0.5-1.0	13-29	15-30
	44-60	7.4-8.4	0.0-0.5	11-26	15-30
HyA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-36	0
	9-48	6.1-8.4	0.5-1.0	17-35	0-15
	48-57	7.4-8.4	0.5-1.0	15-32	15-30
	57-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land.					
JoA:					
Joliet----------	0-6	6.1-8.4	4.0-5.0	19-31	0-20
	6-16	6.1-8.4	1.0-3.0	13-33	0-20
	16-18	---	---	---	---
KeA:					
Kibbie----------	0-16	5.6-7.3	0.5-3.0	2.0-15	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KfA:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KfB:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
KkA:					
Kibbie----------	0-10	5.6-7.3	1.0-3.0	2.8-18	0
	10-16	5.6-7.3	0.0-0.5	2.0-10	0
	16-36	5.6-7.8	0.0-0.5	7.2-22	0-5
	36-60	7.4-8.4	0.0-0.5	0.8-12	10-35
Urban land.					

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
LbB:					
Landes----------	0-20	6.6-8.4	1.0-2.0	4.0-10	0-10
	20-32	6.6-8.4	0.0-2.0	2.0-15	0-10
	32-80	6.6-8.4	0.0-2.0	2.0-15	0-20
LdA:					
Latty-----------	0-10	6.1-7.8	3.0-5.0	22-43	0
	10-41	6.1-7.8	0.5-1.0	19-38	0-5
	41-61	7.4-8.4	0.0-1.0	14-38	5-25
	61-80	7.4-8.4	0.0-0.5	11-26	15-30
LgA:					
Latty-----------	0-8	6.1-7.8	3.0-5.0	22-43	0
	8-39	6.1-7.8	0.5-1.0	19-38	0-5
	39-76	7.4-8.4	0.0-1.0	14-38	5-25
	76-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land.					
MbA:					
Millgrove-------	0-8	5.6-7.3	3.0-8.0	13-32	0
	8-21	6.1-7.8	0.5-1.0	8.2-23	0-5
	21-43	6.1-7.8	0.0-0.5	2.8-12	0-15
	43-60	7.4-8.4	0.0-0.5	1.2-10	10-30
McA:					
Mermill---------	0-8	5.6-7.3	3.0-6.0	11-24	0
	8-38	5.6-7.3	0.5-1.0	8.2-23	0
	38-60	6.6-8.4	0.0-0.5	11-26	0-30
MdA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-28	5.6-7.3	0.5-1.0	8.2-23	0
	28-57	6.6-8.4	0.0-0.5	11-26	0-30
	57-80	7.4-8.4	0.0-0.5	11-26	15-30
MeA:					
Mermill---------	0-8	5.6-7.3	3.0-6.0	14-30	0
	8-38	5.6-7.3	0.5-1.0	8.2-23	0
	38-60	6.6-8.4	0.0-0.5	11-26	0-30
MfA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-35	5.6-7.3	0.5-1.0	8.2-23	0
	35-46	6.6-8.4	0.0-0.5	11-26	0-30
	46-80	7.4-8.4	0.0-0.5	11-26	15-30
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.8-28	0
	11-23	5.6-7.8	0.5-2.0	8.2-25	0-5
	23-29	6.6-7.8	0.0-1.0	6.0-23	0-5
	29-51	7.4-8.4	0.0-0.5	11-26	0-20
	51-80	7.4-8.4	0.0-0.5	11-26	15-30
MgA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-32	5.6-7.3	0.5-1.0	8.2-23	0
	32-47	6.6-8.4	0.0-0.5	11-26	0-30
	47-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land.					

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MhA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---
MkA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---
MmA:					
Millsdale-------	0-7	6.1-7.3	4.0-7.0	19-35	0
	7-32	6.1-8.4	0.5-2.0	15-31	0-15
	32-34	---	---	---	---
Urban land.					
MnA:					
Milton----------	0-6	5.1-7.3	1.0-3.0	7.2-22	0
	6-11	4.5-7.8	0.0-1.0	8.0-23	0
	11-26	6.1-7.8	0.0-0.5	14-31	0-15
	26-28	---	---	---	---
MnB:					
Milton----------	0-6	5.1-7.3	1.0-3.0	7.2-22	0
	6-11	4.5-7.8	0.0-1.0	8.0-23	0
	11-26	6.1-7.8	0.0-0.5	14-31	0-15
	26-28	---	---	---	---
NmA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	6.0-17	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NmB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	6.0-17	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NnB2:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NpA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NpB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
NpB2:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
NsA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-28	5.1-7.8	0.0-1.0	18-38	0-5
	28-60	7.4-8.4	0.0-0.5	11-26	10-30
Urban land.					
OsB:					
Oshtemo---------	0-11	5.1-7.3	0.5-3.0	3.0-15	0
	11-34	5.1-7.3	0.0-0.5	4.0-13	0
	34-44	5.1-7.3	0.0-0.5	2.0-10	0
	44-75	7.4-8.4	0.0-0.5	2.0-7.0	10-25
	75-80	7.4-8.4	0.0-0.5	11-26	18-30
OtA:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
OtB:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
OzB:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	1.8-10	0
	11-47	5.6-7.3	0.0-1.0	0.4-9.2	0
	47-60	6.1-8.4	0.0-0.5	0.4-5.8	0-12
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-48	5.1-7.3	0.0-0.5	0.0-10	0
	48-60	5.1-7.8	0.0-0.5	1.2-10	0
Urban land.					
Pt. Pits, quarry					
RbA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
RbB:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
RdA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
ReA:					
Randolph--------	0-10	5.1-7.3	1.0-3.0	8.4-22	0
	10-32	5.1-7.8	0.0-0.5	14-31	0-15
	32-34	---	---	---	---
Urban land.					
RfA:					
Rimer-----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
RfB:					
Rimer-----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
RgA:					
Rimer-----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-25	5.1-7.3	0.5-1.0	3.0-11	0
	25-27	5.1-7.3	0.0-0.5	2.8-12	0
	27-32	6.1-7.8	0.0-0.5	12-28	0-15
	32-60	7.4-8.4	0.0-0.5	11-26	10-30
Tedrow----------	0-14	6.1-7.3	1.0-3.0	2.8-12	0
	14-34	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	34-60	7.4-8.4	0.0-0.5	11-26	10-30
Urban land.					
RhA:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---
RhB:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---
RkA:					
Ritchey---------	0-8	5.6-7.8	1.0-3.0	9.2-22	0
	8-16	6.6-8.4	0.5-1.0	11-23	0-20
	16-18	---	---	---	---

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
RmA:					
Risingsun-------	0-9	6.1-8.4	30-75	60-150	0-10
	9-11	6.6-8.4	5.0-15	18-51	5-40
	11-26	7.4-8.4	0.5-1.0	1.4-11	10-30
	26-43	7.4-8.4	0.0-1.0	11-23	10-30
	43-80	7.4-8.4	0.0-0.5	11-22	15-30
Rollersville----	0-12	7.4-8.4	3.0-7.0	6.8-23	5-20
	12-26	7.4-8.4	0.5-2.0	1.4-13	10-30
	26-49	7.4-8.4	0.0-1.0	11-23	10-30
	49-80	7.4-8.4	0.0-0.5	11-22	15-30
RnA:					
Rollersville----	0-11	7.4-8.4	3.0-7.0	6.8-23	5-20
	11-38	7.4-8.4	0.5-2.0	1.4-13	10-30
	38-52	7.4-8.4	0.0-1.0	11-23	10-30
	52-80	7.4-8.4	0.0-0.5	11-22	15-30
Risingsun-------	0-9	6.1-8.4	30-75	60-150	0-10
	9-14	6.6-8.4	5.0-15	18-51	5-40
	14-27	7.4-8.4	0.5-1.0	1.4-11	10-30
	27-41	7.4-8.4	0.0-1.0	11-23	10-30
	41-80	7.4-8.4	0.0-0.5	11-22	15-30
RsA:					
Rossburg--------	0-18	6.1-7.8	4.0-8.0	13-32	0-5
	18-36	6.1-7.8	0.5-2.0	8.2-20	0-10
	36-80	6.6-8.4	0.0-0.5	2.0-10	0-30
SdA:					
Seward----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-24	5.1-7.3	0.5-1.0	1.8-11	0
	24-40	5.1-7.3	0.5-1.0	3.0-13	0
	40-45	6.1-7.8	0.0-0.5	11-26	0-15
	45-60	7.4-8.4	0.0-0.5	11-26	10-30
Ottokee---------	0-9	5.6-7.3	0.5-2.0	1.8-10	0
	9-46	5.6-7.3	0.0-1.0	0.4-9.2	0
	46-60	7.4-8.4	0.0-0.5	11-26	10-30
SdB:					
Seward----------	0-8	5.1-7.3	1.0-3.0	3.2-15	0
	8-24	5.1-7.3	0.5-1.0	1.8-11	0
	24-40	5.1-7.3	0.5-1.0	3.0-13	0
	40-45	6.1-7.8	0.0-0.5	11-26	0-15
	45-60	7.4-8.4	0.0-0.5	11-26	10-30
Ottokee---------	0-9	5.6-7.3	0.5-2.0	1.8-10	0
	9-46	5.6-7.3	0.0-1.0	0.4-9.2	0
	46-60	7.4-8.4	0.0-0.5	11-26	10-30
SeA:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	6.8-22	0
	9-53	5.1-7.3	0.0-0.5	7.2-22	0
	53-66	7.4-8.4	0.0-0.5	1.2-10	15-25
	66-80	7.4-8.4	0.0-0.5	9.2-25	15-30
SeB:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	6.8-22	0
	9-53	5.1-7.3	0.0-0.5	7.2-22	0
	53-66	7.4-8.4	0.0-0.5	1.2-10	15-25
	66-80	7.4-8.4	0.0-0.5	9.2-25	15-30

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
SgA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25
ShA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25
SkA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	15-27	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-60	6.6-8.4	0.5-1.0	3.0-17	0-25
SmA:					
Shoals----------	0-8	6.6-7.8	2.0-4.0	11-24	0-5
	8-31	6.6-8.4	0.5-2.0	8.2-24	0-10
	31-33	---	---	---	---
Sloan-----------	0-10	6.1-7.8	3.0-6.0	17-33	0-5
	10-24	6.1-8.4	0.5-1.0	9.8-23	0-20
	24-26	---	---	---	---
SnA:					
Sloan-----------	0-10	6.1-7.8	3.0-6.0	12-28	0-5
	10-26	6.1-8.4	0.5-1.0	9.8-23	0-20
	26-60	6.6-8.4	0.0-0.5	4.0-19	0-40
SoA:					
Sloan-----------	0-11	6.1-7.8	3.0-6.0	17-33	0-5
	11-58	6.1-8.4	0.5-1.0	9.8-23	0-20
	58-80	6.6-8.4	0.0-0.5	4.0-19	0-40
SpA:					
Sloan-----------	0-10	6.1-7.8	3.0-6.0	17-33	0-5
	10-26	6.1-8.4	0.5-1.0	9.8-23	0-20
	26-60	6.6-8.4	0.0-0.5	4.0-19	0-40
SrB:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SrC:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SrD:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SsB:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0
SsC:					
Spinks----------	0-7	5.1-7.3	0.5-2.0	1.8-13	0
	7-38	5.1-7.3	0.0-0.5	0.0-10	0
	38-60	5.1-7.8	0.0-0.5	1.2-10	0

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
StB:					
St. Clair-------	0-8	5.6-7.3	1.0-3.0	10-22	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
StC2:					
St. Clair-------	0-8	5.6-7.3	1.0-3.0	10-22	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuB2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuC2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuD2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
SuE2:					
St. Clair-------	0-8	5.6-7.3	0.5-2.0	12-28	0
	8-18	5.6-7.3	0.0-0.5	16-37	0
	18-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-60	7.4-8.4	0.0-0.5	11-26	15-30
TeA:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
TeB:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
TfA:					
Tedrow----------	0-8	6.1-7.3	1.0-3.0	2.8-12	0
	8-47	5.6-8.4	0.0-0.5	0.8-5.8	0-5
	47-60	6.6-8.4	0.0-0.5	0.4-5.8	0-10
Urban land.					
TpA:					
Toledo----------	0-9	5.6-7.3	3.0-6.0	17-36	0
	9-57	6.1-7.8	0.5-1.0	17-38	0-5
	57-60	7.4-8.4	0.0-0.5	14-37	8-22
TuA:					
Toledo----------	0-9	5.6-7.3	3.0-6.0	17-36	0
	9-57	6.1-7.8	0.5-1.0	17-38	0-5
	57-60	7.4-8.4	0.0-0.5	14-37	8-22

Table 23.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
TuA:					
Urban land.					
UcA, UcE.					
Udorthents					
Ur.					
Urban land					
W.					
Water					
WbA:					
Wabasha---------	0-9	6.1-7.8	3.0-6.0	22-39	0
	9-50	6.1-7.8	0.5-1.0	17-35	0-5
	50-60	6.1-8.4	0.0-0.5	14-34	0-15
WmA:					
Wauseon---------	0-11	6.1-7.3	3.0-7.0	7.2-22	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
WnA:					
Wauseon---------	0-8	6.1-7.3	4.0-8.0	11-27	0
	8-34	6.6-7.8	0.0-1.0	2.0-13	0-5
	34-59	6.6-8.4	0.0-0.5	0.4-5.8	0-25
	59-60	7.4-8.4	0.0-0.5	11-26	15-30
WyA:					
Wauseon---------	0-11	6.1-7.3	4.0-8.0	11-27	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
WzA:					
Wauseon---------	0-11	6.1-7.3	4.0-8.0	11-27	0
	11-30	6.6-7.8	0.0-1.0	2.0-13	0-5
	30-60	7.4-8.4	0.0-0.5	11-26	15-30
Urban land.					

Table 24.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
AgA:										
Alvada----------	B	Jan-May	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
AmA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
AnA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
AsA:										
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
BeB:										
Belmore---------	B	Jan-Apr	2.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.5-3.5	>5.0	Apparent	---	---	None	---	None
BfB:										
Belmore---------	B	Jan-Apr	2.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.5-3.5	>5.0	Apparent	---	---	None	---	None
CaA:										
Castalia--------	C	Jan-Dec	>1.7	>1.7	---	---	---	None	---	None
CbB:										
Castalia--------	C	Jan-Dec	>1.8	>1.8	---	---	---	None	---	None
Marblehead------	C	Jan-Dec	>0.5	>0.5	---	---	---	None	---	None
CcA:										
Colwood---------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
CdA:										
Colwood---------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
CtA:										
Colwood---------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
Urban land.										

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
CvA:										
Cygnet----------	B	Jan-Apr	1.0-2.0	3.3-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CxB:										
Castalia--------	C	Jan-Dec	>1.8	>1.8	---	---	---	None	---	None
Marblehead------	C	Jan-Dec	>0.5	>0.5	---	---	---	None	---	None
Urban land.										
DgA:										
Digby-----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
DhA:										
Digby-----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
DrA:										
Dunbridge-------	B	Jan-Dec	>2.5	>2.5	---	---	---	None	---	None
DsA:										
Dunbridge-------	B	Jan-Dec	>2.1	>2.1	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.2	>4.2	---	---	---	None	---	None
DsB:										
Dunbridge-------	B	Jan-Dec	>2.1	>2.1	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.2	>4.2	---	---	---	None	---	None
EaA:										
Eel-------------	B	Jan-Apr	1.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
EmA:										
Eel-------------	B	Jan-Apr	1.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
EnA:										
Eel-------------	B	Jan-Apr	1.5-2.0	>2.8	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Frequent
FcA:										
Flatrock--------	B	Jan-Apr	1.0-2.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-2.0	>6.0	Apparent	---	---	None	Brief	Occasional
FuA:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
FuB:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
FzA:										
Fulton----------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
Urban land.										
GmA:										
Genesee---------	B	Jan-Jun	>2.0	>2.0	---	---	---	None	Brief	Frequent
		Jul-Sep	>2.0	>2.0	---	---	---	None	---	None
		Oct-Dec	>2.0	>2.0	---	---	---	None	Brief	Frequent
GnA:										
Genesee---------	B	Jan-Jun	>2.0	>2.0	---	---	---	None	Brief	Frequent
		Jul-Sep	>2.0	>2.0	---	---	---	None	---	None
		Oct-Dec	>2.0	>2.0	---	---	---	None	Brief	Frequent
GpA:										
Granby----------	A	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	None
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	None
HaA:										
Haney-----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HaB:										
Haney-----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HdA:										
Haney-----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HdB:										
Haney-----------	B	Jan-Apr	2.5-3.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HeA:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby-----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HeB:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby-----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
HfA:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby-----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HfB:										
Haskins---------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
Digby-----------	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
HgA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HhA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HvA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HwA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	2.5-4.6	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
HyA:										
Hoytville-------	C	Jan-Apr	0.0-1.0	3.3-5.4	Perched	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										
JoA:										
Joliet----------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-Jun	0.0-1.0	>1.3	Apparent	---	---	None	---	None
		Jul-Dec	---	---	---	---	---	None	---	None
KeA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
KfA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
KfB:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
KkA:										
Kibbie----------	B	Jan-May	0.5-1.5	>5.0	Apparent	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	>5.0	Apparent	---	---	None	---	None
Urban land.										
LbB:										
Landes----------	B	Jan-Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Dec	>6.0	>6.0	---	---	---	None	---	None
LdA:										
Latty-----------	D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
LgA:										
Latty-----------	D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										
MbA:										
Millgrove-------	B	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
McA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
MdA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
MeA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
MfA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
Aurand----------	C	Jan-May	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	3.3-5.0	Perched	---	---	None	---	None
MgA:										
Mermill---------	B	Jan-May	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	2.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	None
Urban land.										
MhA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft		Ft				
MkA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
MmA:										
Millsdale-------	C	Jan-May	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.7	Apparent	0.0-1.0	Long	Frequent	---	None
Urban land.										
MnA:										
Milton----------	C	Jan-Dec	>2.2	>2.2	---	---	---	None	---	None
MnB:										
Milton----------	C	Jan-Dec	>2.2	>2.2	---	---	---	None	---	None
NmA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NmB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NnB2:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpB:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
NpB2:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
NsA:										
Nappanee--------	D	Jan-May	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.0	3.3-5.0	Perched	---	---	None	---	None
Urban land.										
OsB:										
Oshtemo---------	B	Jan-May	3.5-6.0	5.0-6.6	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	3.5-6.0	5.0-6.6	Perched	---	---	None	---	None
OtA:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
OtB:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
OzB:										
Ottokee---------	A	Jan-Apr	1.5-3.5	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
Urban land.										
Pt.										
Pits, quarry										
RbA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RbB:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RdA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ReA:										
Randolph--------	C	Jan-Apr	0.5-1.0	>2.7	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										
RfA:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
RfB:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RgA:										
Rimer-----------	C	Jan-Apr	0.5-1.5	2.1-4.6	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Tedrow----------	C	Jan-Apr	0.5-1.5	2.5-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										
RhA:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None
RhB:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None
RkA:										
Ritchey---------	D	Jan-Dec	>1.3	>1.3	---	---	---	None	---	None
RmA:										
Risingsun-------	B	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
Rollersville----	B	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	---	None
RnA:										
Rollersville----	B	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	---	---	None	---	None
Risingsun-------	B	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		May-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	None
RsA:										
Rossburg--------	B	Jan-Jun	>6.0	>6.0	---	---	---	None	Brief	Frequent
		Jul-Oct	>6.0	>6.0	---	---	---	None	---	None
		Nov-Dec	>6.0	>6.0	---	---	---	None	Brief	Frequent
SdA:										
Seward----------	B	Jan-Apr	1.5-3.0	2.5-4.2	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ottokee---------	B	Jan-Apr	1.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
SdB:										
Seward----------	B	Jan-Apr	1.5-3.0	2.5-4.2	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ottokee---------	B	Jan-Apr	1.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
SeA:										
Shawtown--------	B	Jan-Apr	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
SeB:										
Shawtown--------	B	Jan-Apr	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.2-5.8	Perched	---	---	None	---	None
SgA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
ShA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
SkA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
SmA:										
Shoals----------	C	Jan-Apr	0.5-2.0	>2.6	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
Sloan-----------	B	Jan-Jun	0.0-1.0	>2.0	Apparent	0.0-1.0	Long	Frequent	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>2.0	Apparent	0.0-1.0	Long	Frequent	Brief	Frequent
SnA:										
Sloan-----------	B	Jan-Jun	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
SoA:										
Sloan-----------	B	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
SpA:										
Sloan-----------	B	Jan-Jun	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Frequent
SrB:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SrC:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SrD:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
SsB:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
SsC:										
Spinks----------	A	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
StB:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
StC2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuB2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuC2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuD2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
SuE2:										
St. Clair-------	D	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	1.5-3.0	1.7-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
TeA:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
TeB:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
TfA:										
Tedrow----------	B	Jan-Apr	0.5-2.0	>5.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										
TpA:										
Toledo----------	D	Jan-Apr	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
TuA:										
Toledo----------	D	Jan-Apr	0.0-1.0	>5.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft		Ft				
UcA, UcE.										
Udorthents										
Ur.										
Urban land										
W.										
Water										
WbA:										
Wabasha---------	D	Jan-May	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	Long	Frequent
		Jun	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	---	None
		Jul-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>5.0	Apparent	0.0-1.0	Brief	Frequent	---	None
WmA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WnA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	4.0-5.0	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WyA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
WzA:										
Wauseon---------	B	Jan-Apr	0.0-1.0	2.0-3.3	Perched	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land.										

Table 25.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
AgA:							
Alvada	---	>80	---	---	High	High	Low.
AmA:							
Aurand	Dense material	40-60	---	---	High	High	Moderate.
AnA:							
Aurand	Dense material	40-60	---	---	High	High	Moderate.
AsA:							
Aurand	Dense material	40-60	---	---	High	High	Moderate.
Urban land.							
BeB:							
Belmore	---	>60	---	---	Moderate	Low	Low.
BfB:							
Belmore	---	>60	---	---	Moderate	Low	Low.
CaA:							
Castalia	Bedrock (lithic)	20-40	---	---	Moderate	Low	Low.
CbB:							
Castalia	Bedrock (lithic)	20-40	---	---	Moderate	Low	Low.
Marblehead	Bedrock (lithic)	4-10	---	---	Moderate	Low	Low.
CcA:							
Colwood	---	>60	---	---	High	High	Low.
CdA:							
Colwood	---	>60	---	---	High	High	Low.
CtA:							
Colwood	---	>60	---	---	High	High	Low.
Urban land.							
CvA:							
Cygnet	Dense material	40-60	---	---	High	Moderate	Moderate.
CxB:							
Castalia	Bedrock (lithic)	20-40	---	---	Moderate	Low	Low.
Marblehead	Bedrock (lithic)	4-10	---	---	Moderate	Low	Low.
Urban land.							
DgA:							
Digby	---	>60	---	---	High	High	Moderate.
DhA:							
Digby	---	>60	---	---	High	High	Moderate.
DrA:							
Dunbridge	Bedrock (lithic)	18-42	---	---	Moderate	Low	Low.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
DsA:							
Dunbridge----------	Bedrock (lithic)	18-42	---	---	Moderate----	Low---------	Low.
Spinks------------	Bedrock (lithic)	42-60	---	---	Low---------	Low---------	Low.
DsB:							
Dunbridge----------	Bedrock (lithic)	18-42	---	---	Moderate----	Low---------	Low.
Spinks------------	Bedrock (lithic)	42-60	---	---	Low---------	Low---------	Low.
EaA:							
Eel---------------	---	>60	---	---	High--------	Moderate----	Low.
EmA:							
Eel---------------	---	>60	---	---	High--------	Moderate----	Low.
EnA:							
Eel---------------	Bedrock (lithic)	20- 42	---	---	High--------	Moderate----	Low.
FcA:							
Flatrock-----------	---	>80	---	---	High--------	Moderate----	Low.
FuA:							
Fulton------------	Dense material	60-80	---	---	High--------	High--------	Moderate.
FuB:							
Fulton------------	Dense material	60-80	---	---	High--------	High--------	Moderate.
FzA:							
Fulton------------	Dense material	60-80	---	---	High--------	High--------	Moderate.
Urban land.							
GmA:							
Genesee------------	---	>60	---	---	Moderate----	Low---------	Low.
GnA:							
Genesee------------	---	>60	---	---	Moderate----	Low---------	Low.
GpA:							
Granby------------	Dense material	60-80	---	---	Moderate----	High--------	Moderate.
HaA:							
Haney-------------	---	>60	---	---	High--------	Moderate----	Low.
HaB:							
Haney-------------	---	>60	---	---	High--------	Moderate----	Low.
HdA:							
Haney-------------	---	>60	---	---	High--------	Moderate----	Low.
HdB:							
Haney-------------	---	>60	---	---	High--------	Moderate----	Low.
HeA:							
Haskins------------	---	>60	---	---	High--------	High--------	Moderate.
Digby-------------	---	>60	---	---	High--------	High--------	Moderate.
HeB:							
Haskins------------	---	>60	---	---	High--------	High--------	Moderate.
Digby-------------	---	>60	---	---	High--------	High--------	Moderate.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
HfA:							
Haskins	---	>60	---	---	High	High	Moderate.
Digby	---	>60	---	---	High	High	Moderate.
HfB:							
Haskins	---	>60	---	---	High	High	Moderate.
Digby	---	>60	---	---	High	High	Moderate.
HgA:							
Hoytville	Dense material	50-70	---	---	High	High	Low.
HhA:							
Hoytville	Dense material	50-70	---	---	High	High	Low.
HvA:							
Hoytville	Dense material	50-70	---	---	High	High	Low.
HwA:							
Hoytville	---	>60	---	---	High	High	Low.
HyA:							
Hoytville	Dense material	50-70	---	---	High	High	Low.
Urban land.							
JoA:							
Joliet	Bedrock (lithic)	10- 20	---	---	High	High	Low.
KeA:							
Kibbie	---	>60	---	---	High	High	Moderate.
KfA:							
Kibbie	---	>60	---	---	High	High	Moderate.
KfB:							
Kibbie	---	>60	---	---	High	High	Moderate.
KkA:							
Kibbie	---	>60	---	---	High	High	Moderate.
Urban land.							
LbB:							
Landes	---	>80	---	---	Moderate	Low	Low.
LdA:							
Latty	Dense material	60-80	---	---	High	High	Low.
LgA:							
Latty	Dense material	60-80	---	---	High	High	Low.
Urban land.							
MbA:							
Millgrove	---	>60	---	---	High	High	Low.
McA:							
Mermill	---	>60	---	---	High	Moderate	Moderate.
MdA:							
Mermill	---	>80	---	---	High	High	Moderate.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
MeA:							
Mermill	---	>60	---	---	High	Moderate	Moderate.
MfA:							
Mermill	---	>80	---	---	High	High	Moderate.
Aurand	Dense material	40-60	---	---	High	High	Moderate.
MgA:							
Mermill	---	>80	---	---	High	High	Moderate.
Urban land.							
MhA:							
Millsdale	Bedrock (lithic)	20-40	---	---	High	High	Low.
MkA:							
Millsdale	Bedrock (lithic)	20-40	---	---	High	High	Low.
MmA:							
Millsdale	Bedrock (lithic)	20-40	---	---	High	High	Low.
Urban land.							
MnA:							
Milton	Bedrock (lithic)	20-40	---	---	Moderate	High	Moderate.
MnB:							
Milton	Bedrock (lithic)	20-40	---	---	Moderate	High	Moderate.
NmA:							
Nappanee	---	>60	---	---	High	High	Low.
NmB:							
Nappanee	---	>60	---	---	High	High	Low.
NnA:							
Nappanee	---	>60	---	---	High	High	Low.
NnB:							
Nappanee	---	>60	---	---	High	High	Low.
NnB2:							
Nappanee	---	>60	---	---	High	High	Low.
NpA:							
Nappanee	---	>60	---	---	High	High	Low.
NpB:							
Nappanee	---	>60	---	---	High	High	Low.
NpB2:							
Nappanee	---	>60	---	---	High	High	Low.
NsA:							
Nappanee	---	>60	---	---	High	High	Low.
Urban land.							
OsB:							
Oshtemo	Dense material	60-80	---	---	Moderate	Low	Moderate.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
OtA:							
Ottokee	---	>60	---	---	Low	Low	Low.
Spinks	---	>60	---	---	Low	Low	Low.
OtB:							
Ottokee	---	>60	---	---	Low	Low	Low.
Spinks	---	>60	---	---	Low	Low	Low.
OzB:							
Ottokee	---	>60	---	---	Low	Low	Low.
Spinks	---	>60	---	---	Low	Low	Low.
Urban land.							
Pt. Pits, quarry							
RbA:							
Randolph	Bedrock (lithic)	20-40	---	---	High	High	Moderate.
RbB:							
Randolph	Bedrock (lithic)	20-40	---	---	High	High	Moderate.
RdA:							
Randolph	Bedrock (lithic)	20-40	---	---	High	High	Moderate.
ReA:							
Randolph	Bedrock (lithic)	20-40	---	---	High	High	Moderate.
Urban land.							
RfA:							
Rimer	---	>60	---	---	High	High	Moderate.
Tedrow	---	>60	---	---	Moderate	Low	Low.
RfB:							
Rimer	---	>60	---	---	High	High	Moderate.
Tedrow	---	>60	---	---	Moderate	Low	Low.
RgA:							
Rimer	---	>60	---	---	High	High	Moderate.
Tedrow	---	>60	---	---	Moderate	Low	Low.
Urban land.							
RhA:							
Ritchey	Bedrock (lithic)	10-20	---	---	Moderate	Moderate	Low.
RhB:							
Ritchey	Bedrock (lithic)	10-20	---	---	Moderate	Moderate	Low.
RkA:							
Ritchey	Bedrock (lithic)	10-20	---	---	Moderate	Moderate	Low.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
RmA:							
Risingsun	Dense material	40-60	2-6	7-15	High	High	Low.
Rollersville	Dense material	40-60	---	---	High	High	Low.
RnA:							
Rollersville	Dense material	40-60	---	---	High	High	Low.
Risingsun	Dense material	40-60	2-6	7-15	High	High	Low.
RsA:							
Rossburg	---	>80	---	---	Moderate	Low	Low.
SdA:							
Seward	---	>60	---	---	Moderate	High	Moderate.
Ottokee	---	>60	---	---	Low	Low	Low.
SdB:							
Seward	---	>60	---	---	Moderate	High	Moderate.
Ottokee	---	>60	---	---	Low	Low	Low.
SeA:							
Shawtown	Dense material	50-70	---	---	Moderate	Low	Moderate.
SeB:							
Shawtown	Dense material	50-70	---	---	Moderate	Low	Moderate.
SgA:							
Shoals	---	>60	---	---	High	High	Low.
ShA:							
Shoals	---	>60	---	---	High	High	Low.
SkA:							
Shoals	---	>60	---	---	High	High	Low.
SmA:							
Shoals	Bedrock (lithic)	20-42	---	---	High	High	Low.
Sloan	Bedrock (lithic)	20-42	---	---	High	High	Low.
SnA:							
Sloan	---	>60	---	---	High	High	Low.
SoA:							
Sloan	---	>80	---	---	High	High	Low.
SpA:							
Sloan	---	>60	---	---	High	High	Low.
SrB:							
Spinks	---	>60	---	---	Low	Low	Low.
SrC:							
Spinks	---	>60	---	---	Low	Low	Low.
SrD:							
Spinks	---	>60	---	---	Low	Low	Low.
SsB:							
Spinks	---	>60	---	---	Low	Low	Low.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
SsC:							
Spinks	---	>60	---	---	Low	Low	Low.
StB:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
StC2:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
SuB2:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
SuC2:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
SuD2:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
SuE2:							
St. Clair	---	>60	---	---	Moderate	High	Moderate.
TeA:							
Tedrow	---	>60	---	---	Moderate	Low	Low.
TeB:							
Tedrow	---	>60	---	---	Moderate	Low	Low.
TfA:							
Tedrow	---	>60	---	---	Moderate	Low	Low.
Urban land.							
TpA:							
Toledo	---	>60	---	---	High	High	Low.
TuA:							
Toledo	---	>60	---	---	High	High	Low.
Urban land.							
UcA, UcE.							
Udorthents							
Ur.							
Urban land							
W.							
Water							
WbA:							
Wabasha	---	>60	---	---	High	High	Low.
WmA:							
Wauseon	---	>60	---	---	High	High	Low.
WnA:							
Wauseon	---	>60	---	---	High	High	Low.
WyA:							
Wauseon	---	>60	---	---	High	High	Low.

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
WzA:							
Wauseon------------	---	>60	---	---	High--------	High--------	Low.
Urban land.							

Table 26.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alvada	Fine-loamy, mixed, active, mesic Typic Argiaquolls
Aurand	Fine-loamy, mixed, active, mesic Aquic Argiudolls
*Belmore	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Castalia	Loamy-skeletal, carbonatic, mesic Inceptic Haprendolls
*Colwood	Fine-loamy, mixed, active, mesic Typic Endoaquolls
Cygnet	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Digby	Fine-loamy, mixed, active, mesic Aeric Endoaqualfs
Dunbridge	Fine-loamy, mixed, active, mesic Mollic Hapludalfs
Eel	Fine-loamy, mixed, superactive, mesic Fluvaquentic Eutrudepts
Flatrock	Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts
Fulton	Fine, illitic, mesic Aeric Epiaqualfs
Genesee	Fine-loamy, mixed, superactive, mesic Fluventic Eutrudepts
Granby	Sandy, mixed, mesic Typic Endoaquolls
Haney	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Haskins	Fine-loamy, mixed, active, mesic Aeric Epiaqualfs
Hoytville	Fine, illitic, mesic Mollic Epiaqualfs
*Joliet	Loamy, mixed, superactive, mesic Lithic Endoaquolls
*Kibbie	Fine-loamy, mixed, active, mesic Aquollic Hapludalfs
Landes	Coarse-loamy, mixed, superactive, mesic Fluventic Hapludolls
Latty	Fine, illitic, nonacid, mesic Typic Endoaquepts
Marblehead	Loamy, mixed, superactive, mesic Lithic Hapludolls
Mermill	Fine-loamy, mixed, active, mesic Mollic Epiaqualfs
*Millgrove	Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
*Millsdale	Fine, mixed, active, mesic Typic Argiaquolls
Milton	Fine, mixed, active, mesic Typic Hapludalfs
Nappanee	Fine, illitic, mesic Aeric Epiaqualfs
Oshtemo	Coarse-loamy, mixed, active, mesic Typic Hapludalfs
Ottokee	Mixed, mesic Aquic Udipsamments
Randolph	Fine, mixed, active, mesic Aeric Endoaqualfs
Rimer	Loamy, mixed, active, mesic Aquic Arenic Hapludalfs
Risingsun	Fine-loamy, mixed, superactive, calcareous, mesic Histic Humaquepts
Ritchey	Loamy, mixed, superactive, mesic Lithic Hapludalfs
Rollersville	Sandy over loamy, mixed, active, calcareous, mesic Typic Endoaquolls
Rossburg	Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls
Seward	Coarse-loamy over clayey, mixed over illitic, active, mesic Oxyaquic Hapludalfs
Shawtown	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
Shoals	Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts
Sloan	Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls
Spinks	Sandy, mixed, mesic Lamellic Hapludalfs
St. Clair	Fine, illitic, mesic Oxyaquic Hapludalfs
Tedrow	Mixed, mesic Aquic Udipsamments
Toledo	Fine, illitic, nonacid, mesic Mollic Endoaquepts
Udorthents	Loamy, mixed, mesic Typic Udorthents
Wabasha	Fine, illitic, nonacid, mesic Fluvaquentic Endoaquepts
Wauseon	Coarse-loamy over clayey, mixed over illitic, superactive, mesic Typic Epiaquolls

Interpretive Groups

Soils that have similar properties that affect specified land uses and management practices can be grouped for management purposes. The soils in the survey area are assigned to interpretive groups, which are established mainly on the basis of soil properties and other factors that directly influence a specific use of the soil. These interpretive groups allow users of soil surveys to plan reasonable alternatives for the use and management of combinations of soils.

The table in this section lists land capability classification, pasture and hayland suitability groups, prime farmland classification, and hydric classification.

The *land capability classification* system groups soils primarily on the basis of their capability to produce the common cultivated crops and pasture plants without deterioration over a long period of time. The table shows the land capability class and subclass for the map units in Wood County. Additional information about the land capability classification system is provided under the heading “Land Capability Classification” in the “Crops and Pasture” section of this survey.

Pasture and hayland suitability groups are made up of map units having similar potentials and limitations for forage production. These groups simplify soils information and provide soil and plant science information for planning purposes. The table shows the pasture and hayland suitability group for each of the soils in Wood County. Additional information on pasture and hayland suitability groups is provided in the “Crops and Pasture” section of this survey.

Prime farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. This identification is useful in the management and maintenance of the resource base that supports the productive capacity of Ohio agriculture. The table shows which of the map units in Wood County are prime farmland. Additional information on prime farmland is provided in the “Important Farmlands” section of this survey.

The identification of *hydric soils* and information about hydrophytic vegetation and wetland hydrology are used to define wetlands. The table shows which of the soils in Wood County are hydric. Additional information is provided under the heading “Hydric Soils” and in tables 6 and 7.

Interpretive Groups

(Unless otherwise indicated, a complex is treated as a single management unit in the "Land capability classification" column. See text for definitions of the groups. Absence of an entry indicates that the map unit is not suited to the intended use or that no interpretive group is applicable)

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
AgA	2w		Prime farmland where drained	
Alvada		C-1		Hydric
AmA	2w		Prime farmland where drained	
Aurand		C-1		Not hydric
AnA	2w		Prime farmland where drained	
Aurand		C-1		Not hydric
AsA	---		Not prime farmland	
Aurand		---		Not hydric
Urban land.				
BeB	2e		Prime farmland	
Belmore		A-1		Not hydric
BfB	2e		Prime farmland	
Belmore		A-1		Not hydric
CaA	6s		Not prime farmland	
Castalia		F-1		Not hydric
CbB	6s		Not prime farmland	
Castalia		F-1		Not hydric
Marblehead		E-1		Not hydric
CcA	2w		Prime farmland where drained	
Colwood		C-1		Hydric
CdA	2w		Prime farmland where drained	
Colwood		C-1		Hydric
CtA	---		Not prime farmland	
Colwood		---		Hydric
Urban land.				
CvA	1		Prime farmland	
Cygnet		A-6		Not hydric
CxB	---		Not prime farmland	
Castalia		---		Not hydric
Marblehead		---		Not hydric
Urban land.				
DgA	2w		Prime farmland where drained	
Digby		C-1		Not hydric
DhA	2w		Prime farmland where drained	
Digby		C-1		Not hydric
DrA	3s		Prime farmland	
Dunbridge		F-1		Not hydric
DsA	3s		Not prime farmland	
Dunbridge		F-1		Not hydric
Spinks		B-1		Not hydric

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
DsB------------------	3s		Not prime farmland	
Dunbridge-----------		F-1		Not hydric
Spinks--------------		B-1		Not hydric
EaA------------------	2w		Prime farmland*	
Eel-----------------		A-5		Not hydric
EmA------------------	2w		Prime farmland*	
Eel-----------------		A-5		Not hydric
EnA------------------	2w		Prime farmland*	
Eel-----------------		A-5		Not hydric
FcA------------------	2w		Prime farmland	
Flatrock------------		A-5		Not hydric
FuA------------------	3w		Prime farmland where drained	
Fulton--------------		C-2		Not hydric
FuB------------------	3e		Prime farmland where drained	
Fulton--------------		C-2		Not hydric
FzA------------------	---		Not prime farmland	
Fulton--------------		---		Not hydric
Urban land.				
GmA------------------	2w		Prime farmland*	
Genesee-------------		A-5		Not hydric
GnA------------------	2w		Prime farmland*	
Genesee-------------		A-5		Not hydric
GpA------------------	4w		Not prime farmland	
Granby--------------		C-1		Hydric
HaA------------------	1		Prime farmland	
Haney---------------		A-6		Not hydric
HaB------------------	2e		Prime farmland	
Haney---------------		A-6		Not hydric
HdA------------------	1		Prime farmland	
Haney---------------		A-6		Not hydric
HdB------------------	2e		Prime farmland	
Haney---------------		A-6		Not hydric
HeA------------------	2w		Prime farmland where drained	
Haskins-------------		C-1		Not hydric
Digby---------------		C-1		Not hydric
HeB------------------	2e		Prime farmland where drained	
Haskins-------------		C-1		Not hydric
Digby---------------		C-1		Not hydric
HfA------------------	2w		Prime farmland where drained	
Haskins-------------		C-1		Not hydric
Digby---------------		C-1		Not hydric

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
HfB------------------	2e		Prime farmland where drained	
Haskins-------------		C-1		Not hydric
Digby---------------		C-1		Not hydric
HgA------------------	2w		Prime farmland where drained	
Hoytville-----------		C-1		Hydric
HhA------------------	2w		Prime farmland where drained	
Hoytville-----------		C-1		Hydric
HvA------------------	2w		Prime farmland where drained	
Hoytville-----------		C-1		Hydric
HwA------------------	2w		Prime farmland where drained	
Hoytville-----------		C-1		Hydric
HyA------------------	---		Not prime farmland	
Hoytville-----------		---		Hydric
Urban land.				
JoA------------------	4w		Not prime farmland	
Joliet--------------		E-1		Hydric
KeA------------------	2w		Prime farmland where drained	
Kibbie--------------		C-1		Not hydric
KfA------------------	2w		Prime farmland where drained	
Kibbie--------------		C-1		Not hydric
KfB------------------	2e		Prime farmland where drained	
Kibbie--------------		C-1		Not hydric
KkA------------------	---		Not prime farmland	
Kibbie--------------		---		Not hydric
Urban land.				
LbB------------------	2w		Prime farmland*	
Landes--------------		A-5		Not hydric
LdA------------------	3w		Prime farmland where drained	
Latty---------------		C-2		Hydric
LgA------------------	---		Not prime farmland	
Latty---------------		---		Hydric
Urban land.				
MbA------------------	2w		Prime farmland where drained	
Millgrove-----------		C-1		Hydric
McA------------------	2w		Prime farmland where drained	
Mermill-------------		C-1		Hydric
MdA------------------	2w		Prime farmland where drained	
Mermill-------------		C-1		Hydric
MeA------------------	2w		Prime farmland where drained	
Mermill-------------		C-1		Hydric

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
MfA	2w		Prime farmland where drained	
Mermill		C-1		Hydric
Aurand		C-1		Not hydric
MgA	---		Not prime farmland	
Mermill		---		Hydric
Urban land.				
MhA	3w		Prime farmland where drained	
Millsdale		C-2		Hydric
MkA	6s		Not prime farmland	
Millsdale		C-2		Hydric
MmA	---		Not prime farmland	
Millsdale		---		Hydric
Urban land.				
MnA	2s		Prime farmland	
Milton		F-1		Not hydric
MnB	2e		Prime farmland	
Milton		F-1		Not hydric
NmA	3w		Prime farmland where drained	
Nappanee		C-2		Not hydric
NmB	3e		Prime farmland where drained	
Nappanee		C-2		Not hydric
NnA	3w		Prime farmland where drained	
Nappanee		C-2		Not hydric
NnB	3e		Prime farmland where drained	
Nappanee		C-2		Not hydric
NnB2	3e		Prime farmland where drained	
Nappanee		C-2		Not hydric
NpA	3w		Prime farmland where drained	
Nappanee		C-2		Not hydric
NpB	3e		Prime farmland where drained	
Nappanee		C-2		Not hydric
NpB2	3e		Prime farmland where drained	
Nappanee		C-2		Not hydric
NsA	---		Not prime farmland	
Nappanee		---		Not hydric
Urban land.				
OsB	3e		Prime farmland	
Oshtemo		A-1		Not hydric
OtA	3s		Not prime farmland	
Ottokee		B-1		Not hydric
Spinks		B-1		Not hydric

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
OtB	3s		Not prime farmland	
Ottokee		B-1		Not hydric
Spinks		B-1		Not hydric
OzB	---		Not prime farmland	
Ottokee		---		Not hydric
Spinks		---		Not hydric
Urban land.				
Pt.				
Pits, quarry				
RbA	3w		Prime farmland where drained	
Randolph		C-1		Not hydric
RbB	3e		Prime farmland where drained	
Randolph		C-1		Not hydric
RdA	6s		Not prime farmland	
Randolph		C-1		Not hydric
ReA	---		Not prime farmland	
Randolph		---		Not hydric
Urban land.				
RfA	2w		Prime farmland where drained	
Rimer		C-1		Not hydric
Tedrow		C-1		Not hydric
RfB	2e		Prime farmland where drained	
Rimer		C-1		Not hydric
Tedrow		C-1		Not hydric
RgA	---		Not prime farmland	
Rimer		---		Not hydric
Tedrow		---		Not hydric
Urban land.				
RhA	3s		Not prime farmland	
Ritchey		E-1		Not hydric
RhB	3e		Not prime farmland	
Ritchey		E-1		Not hydric
RkA	6s		Not prime farmland	
Ritchey		E-1		Not hydric
RmA	3w		Prime farmland where drained	
Risingsun		D-1		Hydric
Rollersville		C-1		Hydric
RnA	3w		Prime farmland where drained	
Rollersville		C-1		Hydric
Risingsun		D-1		Hydric
RsA	2w		Prime farmland*	
Rossburg		A-5		Not hydric

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
SdA------------------	2s		Not prime farmland	
Seward--------------		B-1		Not hydric
Ottokee-------------		B-1		Not hydric
SdB------------------	2e		Not prime farmland	
Seward--------------		B-1		Not hydric
Ottokee-------------		B-1		Not hydric
SeA------------------	1		Prime farmland	
Shawtown------------		A-1		Not hydric
SeB------------------	2e		Prime farmland	
Shawtown------------		A-1		Not hydric
SgA------------------	2w		Prime farmland**	
Shoals--------------		C-3		Not hydric
ShA------------------	2w		Prime farmland**	
Shoals--------------		C-3		Not hydric
SkA------------------	2w		Prime farmland**	
Shoals--------------		C-3		Not hydric
SmA------------------	3w		Prime farmland**	
Shoals--------------		C-3		Not hydric
Sloan---------------		B-3		Hydric
SnA------------------	3w		Prime farmland**	
Sloan---------------		C-3		Hydric
SoA------------------	3w		Prime farmland*	
Sloan---------------		C-3		Hydric
SpA------------------	3w		Prime farmland**	
Sloan---------------		C-3		Hydric
SrB------------------	3s		Not prime farmland	
Spinks--------------		B-1		Not hydric
SrC------------------	3e		Not prime farmland	
Spinks--------------		B-1		Not hydric
SrD------------------	4e		Not prime farmland	
Spinks--------------		B-1		Not hydric
SsB------------------	3s		Not prime farmland	
Spinks--------------		B-1		Not hydric
SsC------------------	3e		Not prime farmland	
Spinks--------------		B-1		Not hydric
StB------------------	3e		Prime farmland	
St. Clair-----------		F-5		Not hydric
StC2-----------------	4e		Not prime farmland	
St. Clair-----------		F-5		Not hydric
SuB2-----------------	3e		Prime farmland	
St. Clair-----------		F-5		Not hydric

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitability group	Prime farmland classification	Hydric classification
SuC2-----------------	4e		Not prime farmland	
St. Clair-----------		F-5		Not hydric
SuD2-----------------	6e		Not prime farmland	
St. Clair-----------		F-5		Not hydric
SuE2-----------------	7e		Not prime farmland	
St. Clair-----------		F-5		Not hydric
TeA------------------	3s		Not prime farmland	
Tedrow--------------		C-1		Not hydric
TeB------------------	3s		Not prime farmland	
Tedrow--------------		C-1		Not hydric
TfA------------------	---		Not prime farmland	
Tedrow--------------		---		Not hydric
Urban land.				
TpA------------------	3w		Prime farmland where drained	
Toledo--------------		C-2		Hydric
TuA------------------	---		Not prime farmland	
Toledo--------------		---		Hydric
Urban land.				
UcA, UcE.				
Udorthents				
Ur.				
Urban land				
W.				
Water				
WbA------------------	3w		Prime farmland**	
Wabasha-------------		C-3		Hydric
WmA------------------	3w		Prime farmland where drained	
Wauseon-------------		C-1		Hydric
WnA------------------	3w		Prime farmland where drained	
Wauseon-------------		C-1		Hydric
WyA------------------	3w		Prime farmland where drained	
Wauseon-------------		C-1		Hydric
WzA------------------	---		Not prime farmland	
Wauseon-------------		---		Hydric
Urban land.				

* Where protected from flooding or not frequently flooded during the growing season.

** Where drained and either protected from flooding or not frequently flooded during the growing season.

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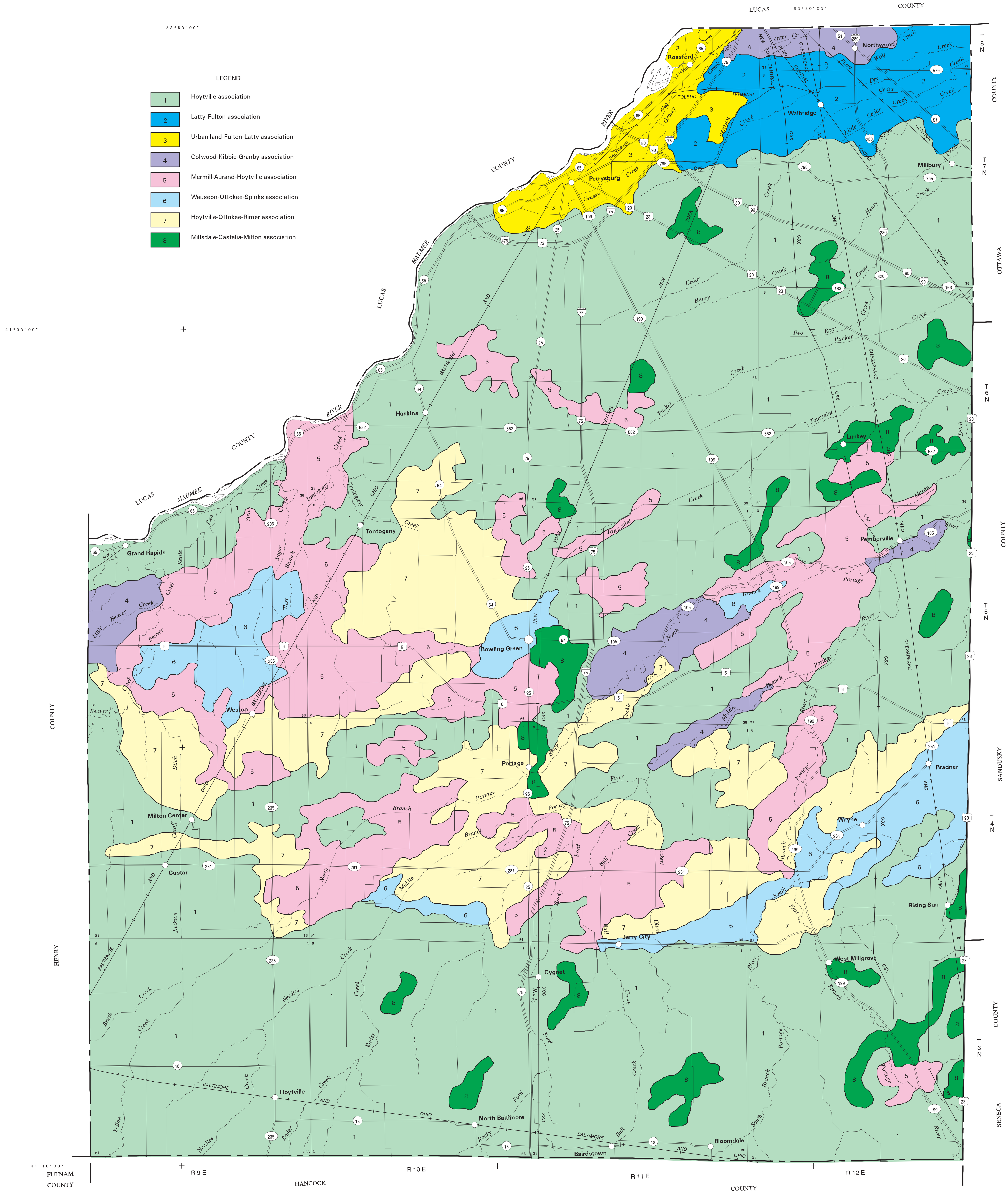


SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION
WOOD SOIL AND WATER CONSERVATION DISTRICT
WOOD COUNTY COMMISSIONERS

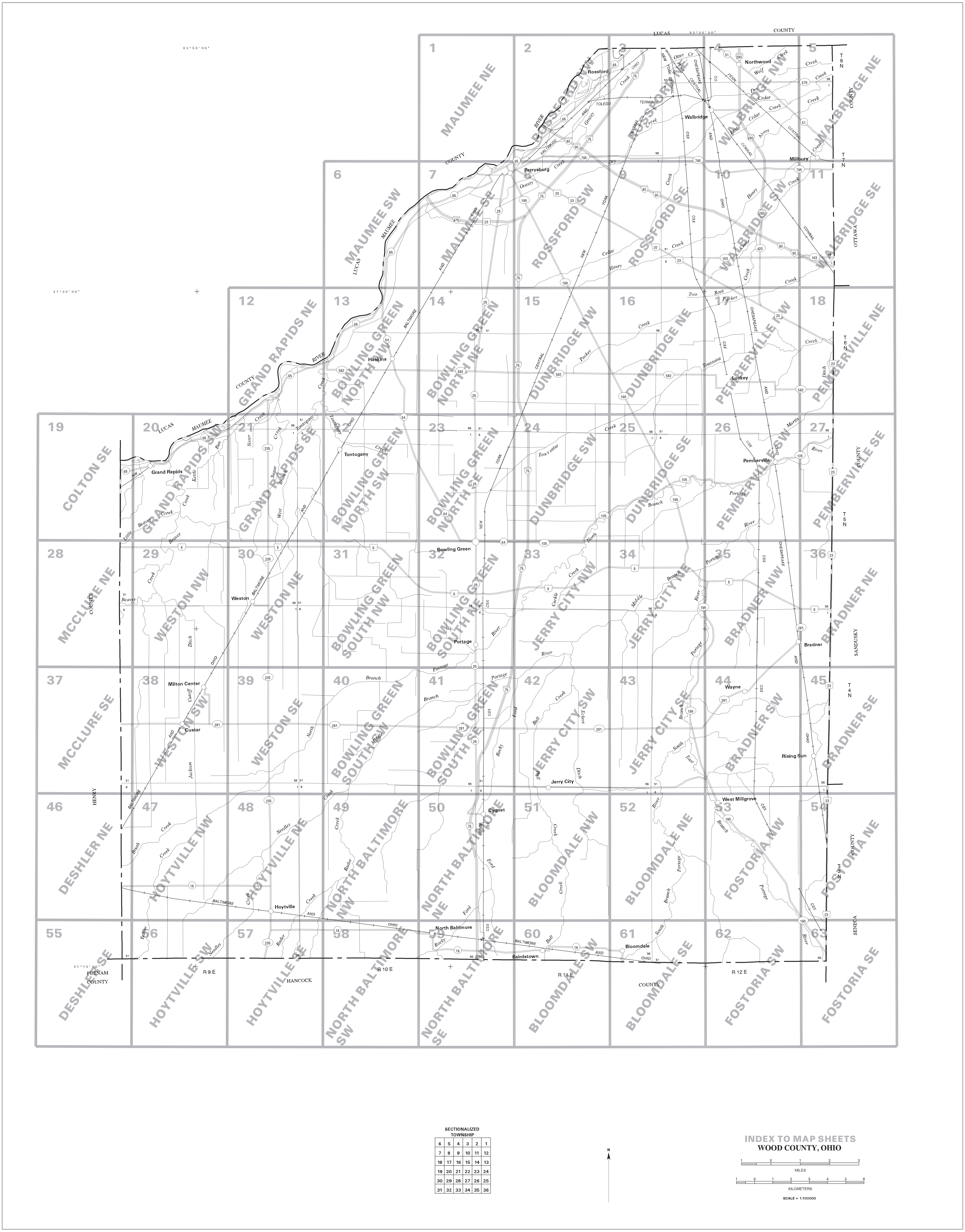
GENERAL SOIL MAP
WOOD COUNTY, OHIO

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:100000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



INDEX TO MAP SHEETS
WOOD COUNTY, OHIO
SECTIONALIZED TOWNSHIP
MAUMEE NE
ROSSFORD NW
ROSSFORD NE
WALBRIDGE NW
WALBRIDGE NE
MAUMEE SW
MAUMEE SE
ROSSFORD SW
ROSSFORD SE
WALBRIDGE SW
WALBRIDGE SE
GRAND RAPIDS NE
BOWLING GREEN NORTH NW
BOWLING GREEN NORTH NE
DUNBRIDGE NW
DUNBRIDGE NE
PEMBERVILLE NW
PEMBERVILLE NE
COLTON SE
GRAND RAPIDS SW
GRAND RAPIDS SE
BOWLING GREEN NORTH SW
BOWLING GREEN NORTH SE
DUNBRIDGE SW
DUNBRIDGE SE
PEMBERVILLE SW
PEMBERVILLE SE
MCCLURE NE
WESTON NW
WESTON NE
BOWLING GREEN SOUTH NW
BOWLING GREEN SOUTH NE
JERRY CITY NW
JERRY CITY NE
BRADNER NW
BRADNER NE
MCCLURE SE
WESTON SW
WESTON SE
BOWLING GREEN SOUTH SW
BOWLING GREEN SOUTH SE
JERRY CITY SW
JERRY CITY SE
BRADNER SW
BRADNER SE
DESHLER NE
HOYTVILLE NW
HOYTVILLE NE
NORTH BALTIMORE NW
NORTH BALTIMORE NE
BLOOMDALE NW
BLOOMDALE NE
FOSTORIA NW
FOSTORIA NE
DESHLER SE
HOYTVILLE SW
HOYTVILLE SE
NORTH BALTIMORE SW
NORTH BALTIMORE SE
BLOOMDALE SW
BLOOMDALE SE
FOSTORIA SW
FOSTORIA SE
Rossford
Northwood
Walbridge
Millbury
Perrysburg
Haskins
Luckey
Grand Rapids
Tontogany
Pemberville
Bowling Green
Weston
Portage
Bradner
Milton Center
Custar
Wayne
Rising Sun
Jerry City
Cygnet
West Millgrove
Hoytville
North Baltimore
Bairdstown
Bloomdale
LUCAS COUNTY
OTTAWA COUNTY
SANDUSKY COUNTY
SENECA COUNTY
HANCOCK COUNTY
PUTNAM COUNTY
HENRY COUNTY
MAUMEE RIVER
R 9 E
R 10 E
R 11 E
R 12 E
T 8 N
T 7 N
T 6 N
T 5 N
T 4 N
T 3 N
83°50'00"
83°30'00"
41°30'00"
41°10'00"
MILES
KILOMETERS
SCALE = 1:100000

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO

OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION
WOOD SOIL AND WATER CONSERVATION DISTRICT
WOOD COUNTY COMMISSIONERS

SOIL LEGEND

Map symbols consist of a combination of letters or letters and numbers. The first uppercase letter is the initial letter of the map unit name. The lowercase letter that follows separates map units having names that begin with the same letter, except that it does not separate sloping or eroded phases. The second uppercase letter indicates the class of slope. (Symbols for miscellaneous areas do not have a slope class letter.) A final number of 2 indicates that the map unit is eroded. A symbol without a number following the slope class letter indicates that the map unit is not eroded or is only slightly eroded.

SYMBOL	NAME
AgA	Alvada loam, 0 to 1 percent slopes
AmA	Aurand fine sandy loam, 0 to 2 percent slopes
AnA	Aurand loam, 0 to 2 percent slopes
AsA	Aurand-Urban land complex, 0 to 2 percent slopes
BeB	Belmore sandy loam, 1 to 4 percent slopes
BfB	Belmore loam, 1 to 4 percent slopes
CaA	Castalia very cobbly loam, 0 to 2 percent slopes
CbB	Castalia-Marblehead complex, very stony, 0 to 6 percent slopes
CcA	Colwood fine sandy loam, 0 to 1 percent slopes
CdA	Colwood loam, 0 to 1 percent slopes
CtA	Colwood-Urban land complex, 0 to 1 percent slopes
CvA	Cygnet loam, 0 to 2 percent slopes
CxB	Castalia-Marblehead-Urban land complex, very stony, 0 to 6 percent slopes
DgA	Digby sandy loam, 0 to 2 percent slopes
DhA	Digby loam, 0 to 2 percent slopes
DrA	Dunbridge sandy loam, 0 to 2 percent slopes
DsA	Dunbridge-Spinks, deep to limestone, loamy fine sands, 0 to 2 percent slopes
DsB	Dunbridge-Spinks, deep to limestone, loamy fine sands, 2 to 6 percent slopes
EaA	Eel loam, 0 to 2 percent slopes, frequently flooded
EmA	Eel silt loam, 0 to 2 percent slopes, frequently flooded
EnA	Eel silt loam, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FuA	Fulton silty clay loam, till substratum, 0 to 2 percent slopes
FuB	Fulton silty clay loam, till substratum, 2 to 6 percent slopes
FzA	Fulton, till substratum-Urban land complex, 0 to 2 percent slopes
GmA	Genesee loam, 0 to 2 percent slopes, frequently flooded
GnA	Genesee silt loam, 0 to 2 percent slopes, frequently flooded
GpA	Granby loamy fine sand, till substratum, 0 to 1 percent slopes
HaA	Haney sandy loam, 0 to 2 percent slopes
HaB	Haney sandy loam, 2 to 6 percent slopes
HdA	Haney loam, 0 to 2 percent slopes
HdB	Haney loam, 2 to 6 percent slopes
HeA	Haskins and Digby, till substratum, fine sandy loams, 0 to 2 percent slopes
HeB	Haskins and Digby, till substratum, fine sandy loams, 2 to 6 percent slopes
HfA	Haskins and Digby, till substratum, loams, 0 to 2 percent slopes
HfB	Haskins and Digby, till substratum, loams, 2 to 6 percent slopes
HgA	Hoytville clay loam, 0 to 1 percent slopes
HhA	Hoytville silty clay loam, 0 to 1 percent slopes
HvA	Hoytville silty clay, 0 to 1 percent slopes
HwA	Hoytville clay, shallow to carbonates, 0 to 1 percent slopes
HyA	Hoytville-Urban land complex, 0 to 1 percent slopes
JoA	Joliet silty clay loam, 0 to 1 percent slopes
KeA	Kibbie loamy fine sand, 0 to 2 percent slopes
KfA	Kibbie fine sandy loam, 0 to 2 percent slopes
KfB	Kibbie fine sandy loam, 2 to 6 percent slopes
KkA	Kibbie-Urban land complex, 0 to 2 percent slopes
LbB	Landes loamy fine sand, 0 to 6 percent slopes, frequently flooded
LdA	Latty silty clay, till substratum, 0 to 1 percent slopes
LgA	Latty, till substratum-Urban land complex, 0 to 1 percent slopes
MbA	Millgrove loam, 0 to 1 percent slopes
McA	Mermill fine sandy loam, 0 to 1 percent slopes
MdA	Mermill loam, 0 to 1 percent slopes
MeA	Mermill sandy clay loam, 0 to 1 percent slopes
MfA	Mermill-Aurand complex, 0 to 1 percent slopes
MgA	Mermill-Urban land complex, 0 to 1 percent slopes
MhA	Millsdale silty clay loam, 0 to 1 percent slopes
MkA	Millsdale silty clay loam, stony, 0 to 1 percent slopes
MmA	Millsdale-Urban land complex, 0 to 1 percent slopes
MnA	Milton loam, 0 to 2 percent slopes
MnB	Milton loam, 2 to 6 percent slopes
NmA	Nappanee sandy loam, 0 to 2 percent slopes
NmB	Nappanee sandy loam, 2 to 6 percent slopes

SYMBOL	NAME
NnA	Nappanee loam, 0 to 2 percent slopes
NnB	Nappanee loam, 2 to 6 percent slopes
NnB2	Nappanee loam, 2 to 6 percent slopes, eroded
NpA	Nappanee silty clay loam, 0 to 2 percent slopes
NpB	Nappanee silty clay loam, 2 to 6 percent slopes
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded
NsA	Nappanee-Urban land complex, 0 to 2 percent slopes
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
OtA	Ottokee-Spinks loamy fine sands, 0 to 2 percent slopes
OtB	Ottokee-Spinks loamy fine sands, 2 to 6 percent slopes
OzB	Ottokee-Spinks-Urban land complex, 0 to 6 percent slopes
Pt	Pits, quarry
RbA	Randolph loam, 0 to 2 percent slopes
RbB	Randolph loam, 2 to 6 percent slopes
RdA	Randolph loam, stony, 0 to 2 percent slopes
ReA	Randolph-Urban land complex, 0 to 2 percent slopes
RfA	Rimer and Tedrow, till substratum, loamy fine sands, 0 to 2 percent slopes
RfB	Rimer and Tedrow, till substratum, loamy fine sands, 2 to 6 percent slopes
RgA	Rimer and Tedrow-Urban land complex, 0 to 2 percent slopes
RhA	Ritchey loam, 0 to 2 percent slopes
RhB	Ritchey loam, 2 to 6 percent slopes
RkA	Ritchey loam, stony, 0 to 2 percent slopes
RmA	Risingsun-Rollersville complex, 0 to 1 percent slopes
RnA	Rollersville-Risingsun complex, 0 to 1 percent slopes
RsA	Rossburg silt loam, 0 to 2 percent slopes, frequently flooded
SdA	Seward and Ottokee, till substratum, loamy fine sands, 0 to 2 percent slopes
SdB	Seward and Ottokee, till substratum, loamy fine sands, 2 to 6 percent slopes
SeA	Shawtown loam, 0 to 2 percent slopes
SeB	Shawtown loam, 2 to 6 percent slopes
SgA	Shoals loam, 0 to 2 percent slopes, frequently flooded
ShA	Shoals silt loam, 0 to 2 percent slopes, frequently flooded
SkA	Shoals silty clay loam, 0 to 2 percent slopes, frequently flooded
SmA	Shoals and Sloan complex, moderately deep to limestone, 0 to 2 percent slopes, frequently flooded
SnA	Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
SpA	Sloan silty clay loam, 0 to 1 percent slopes, frequently flooded
SrB	Spinks fine sand, 2 to 6 percent slopes
SrC	Spinks fine sand, 6 to 12 percent slopes
SrD	Spinks fine sand, 12 to 18 percent slopes
SsB	Spinks loamy fine sand, 2 to 6 percent slopes
SsC	Spinks loamy fine sand, 6 to 12 percent slopes
StB	St. Clair loam, 2 to 6 percent slopes
StC2	St. Clair loam, 6 to 12 percent slopes, eroded
SuB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
SuC2	St. Clair silty clay loam, 6 to 12 percent slopes, eroded
SuD2	St. Clair silty clay loam, 12 to 18 percent slopes, eroded
SuE2	St. Clair silty clay loam, 18 to 25 percent slopes, eroded
TeA	Tedrow loamy fine sand, 0 to 2 percent slopes
TeB	Tedrow loamy fine sand, 2 to 6 percent slopes
TfA	Tedrow-Urban land complex, 0 to 2 percent slopes
TpA	Toledo silty clay loam, 0 to 1 percent slopes
TuA	Toledo-Urban land complex, 0 to 1 percent slopes
UcA	Udorthents, loamy, 0 to 2 percent slopes
UcE	Udorthents, loamy, 2 to 25 percent slopes
Ur	Urban land
W	Water
WbA	Wabasha silty clay, 0 to 1 percent slopes, frequently flooded
WmA	Wauseon loamy fine sand, 0 to 1 percent slopes
WnA	Wauseon fine sandy loam, deep to till, 0 to 1 percent slopes
WyA	Wauseon fine sandy loam, 0 to 1 percent slopes
WzA	Wauseon-Urban land complex, 0 to 1 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES
- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park)
- Land grant
- Limit of soil survey (label) and/or denied access area
- Field sheet matchline & neatline
- Previously Published Survey

OTHER BOUNDARY (label)
- Airport, airfield
- Cemetery
- City/county park

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(section and land grants)

GEOGRAPHIC COORDINATE TICK

TRANSPORTATION
- Divided roads
- Other roads
- Trail

ROAD EMBLEM AND DESIGNATIONS
- Interstate — 173, 79 345
- Federal — 287, 410 224
- State — 52, 52 347
- County, township — Name

RAILROAD

POWER TRANSMISSION LINE

PIPELINE

FENCE

LEVEES
- Without road
- With road
- With railroad
- Single side slope (showing actual feature location)

DAMS
- Medium or Small — W

LANDFORM FEATURES
- Prominent hill or peak
- Soil Sample Site — S

MISCELLANEOUS CULTURAL FEATURES
- Farmstead, house
- Church
- School
- Other Religion — Mt Carmel
- Located object — Ranger Station
- Tank — Petroleum
- Lookout Tower
- Oil and/or Natural Gas Wells
- Windmill
- Lighthouse

HYDROGRAPHIC FEATURES

STREAMS
- Perennial stream, double line
- Perennial stream, single line
- Intermittent stream
- Drainage end

DRAINAGE AND IRRIGATION
- Double-line canal (label) — CANAL
- Perennial drainage and/or irrigation ditch
- Intermittent drainage and/or irrigation ditch

SMALL LAKES, PONDS AND RESERVOIRS
- Perennial water
- Miscellaneous water
- Flood pool line — FLOOD POOL LINE

MISCELLANEOUS WATER FEATURES
- Spring
- Well, artesian
- Well, irrigation

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS — CeA EgA

LANDFORM FEATURES
- Bedrock escarpments
- Other than bedrock escarpments
- Short steep slope
- Gully
- Depression, closed
- Sinkhole

EXCAVATIONS
- Borrow pits
- Gravel pit
- Mine or quarry
- Landfill

MISCELLANEOUS SURFACE FEATURES
- Blowout
- Clay spot
- Cut and fill land
- Gravelly spot
- Muck spot
- Marsh or swamp
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip
- Sodic spot
- Spoil area
- Stony spot
- Typical pedon site
- Very stony spot
- Wet spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
MAUMEE NE QUADRANGLE
SHEET NUMBER 1 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	■	2
6	7	8

2 ROSSFORD NW
6 MAUMEE SW
7 MAUMEE SE
8 ROSSFORD SW

INDEX TO ADJOINING 3.75 MAPS

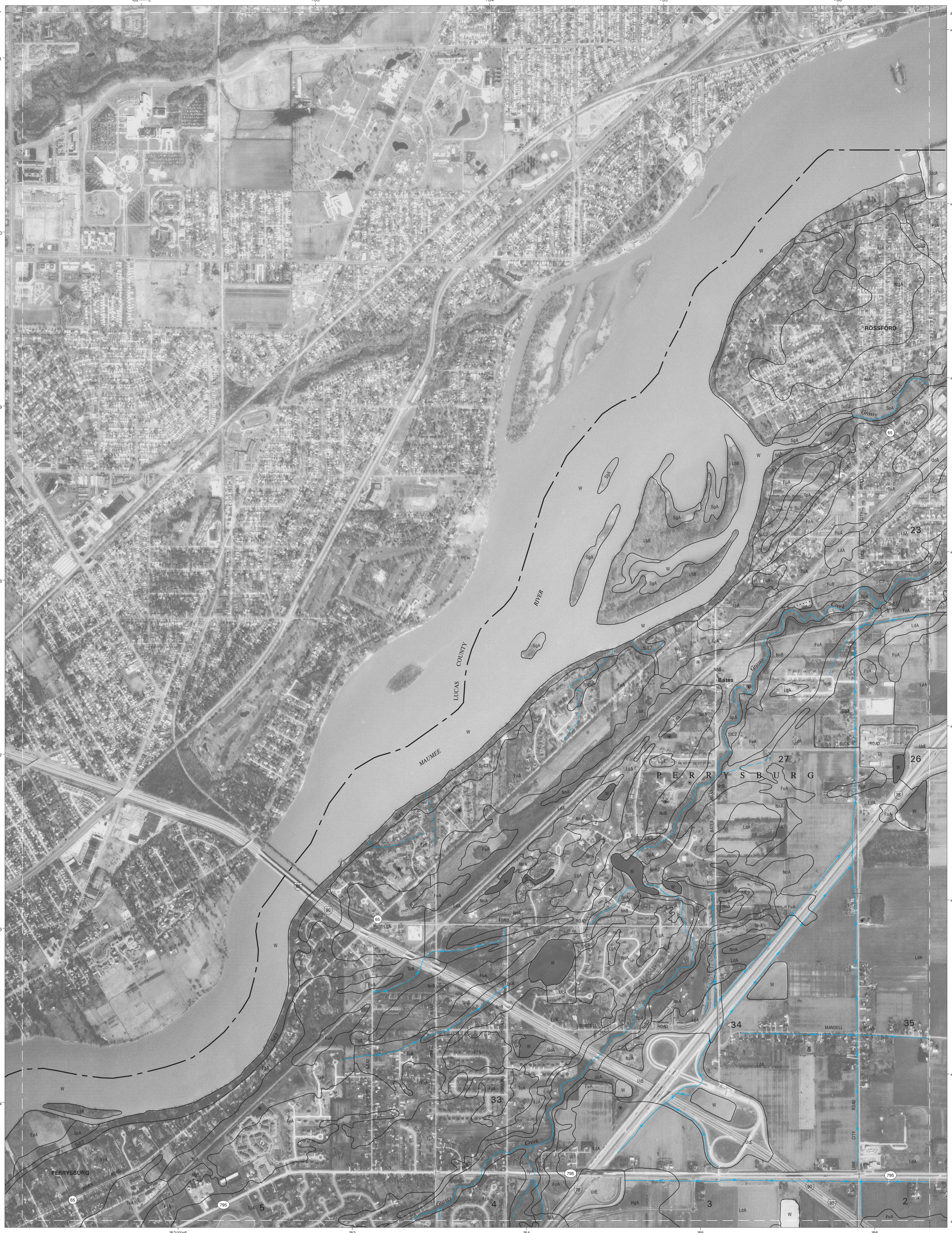
MAUMEE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
ROSSFORD NW QUADRANGLE
SHEET NUMBER 2 OF 63

83° 37′30″ — 83° 33′45″ — 41° 37′30″ — 41° 33′45″



83° 37′30″ — 82 000m E — 83 — 84 — 85 — 86 — 83° 33′45″

T. 4

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5
MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500
FEET

0.5 — 0 — 0.5
KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

1 MAUMEE NE
3 ROSSFORD NE
7 MAUMEE SE
8 ROSSFORD SW
9 ROSSFORD SE

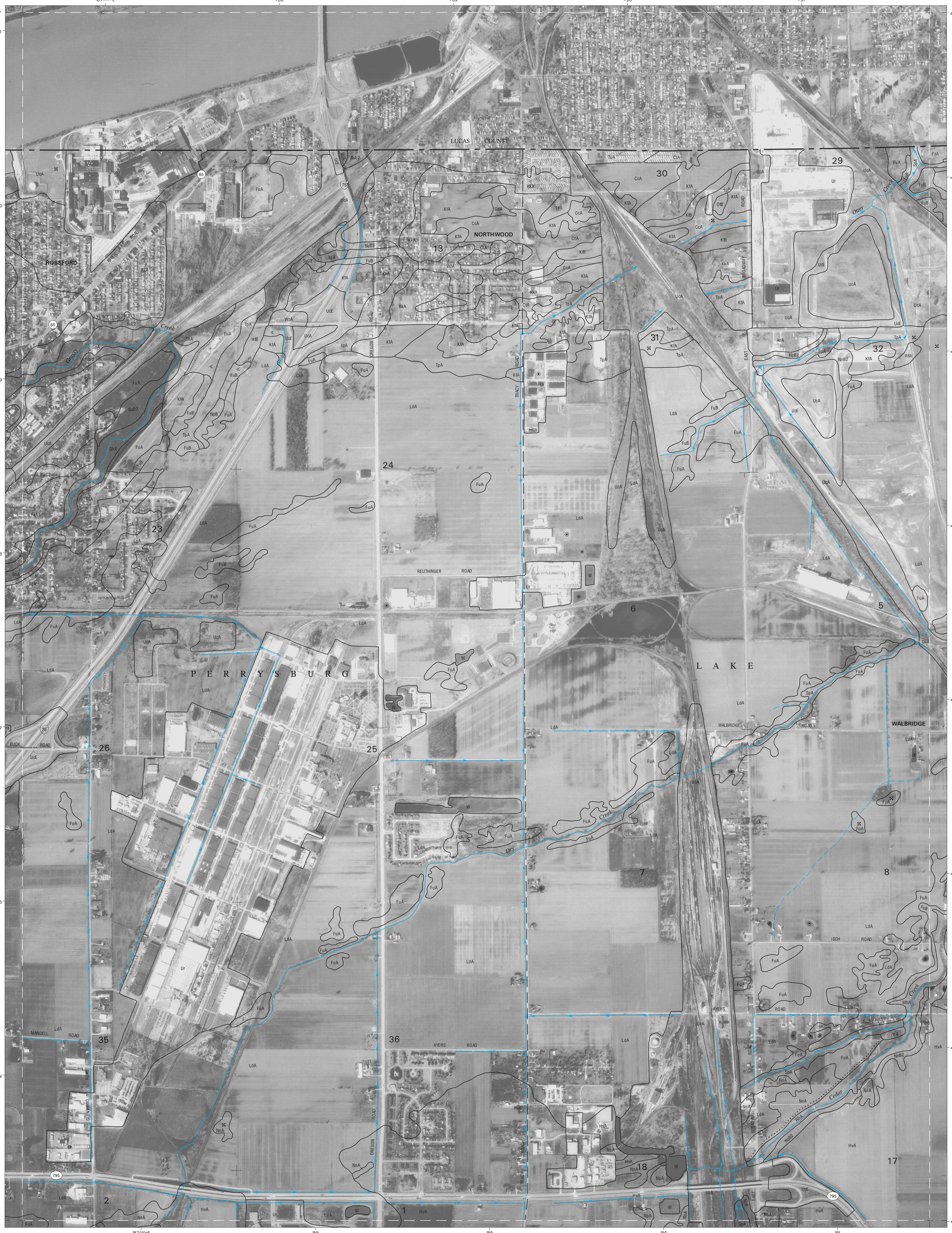
ROSSFORD NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
ROSSFORD NE QUADRANGLE
SHEET NUMBER 3 OF 63

83° 33′45″ 41° 37′30″ 83° 30′00″ 41° 37′30″



83° 33′45″ 41° 33′45″ 83° 30′00″ 41° 33′45″

T. 4 | R. 12 E.

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

INDEX TO ADJOINING 3.75 MAPS

2 ROSSFORD NW
4 WALBRIDGE NW
8 ROSSFORD SW
9 ROSSFORD SE
10 WALBRIDGE SW

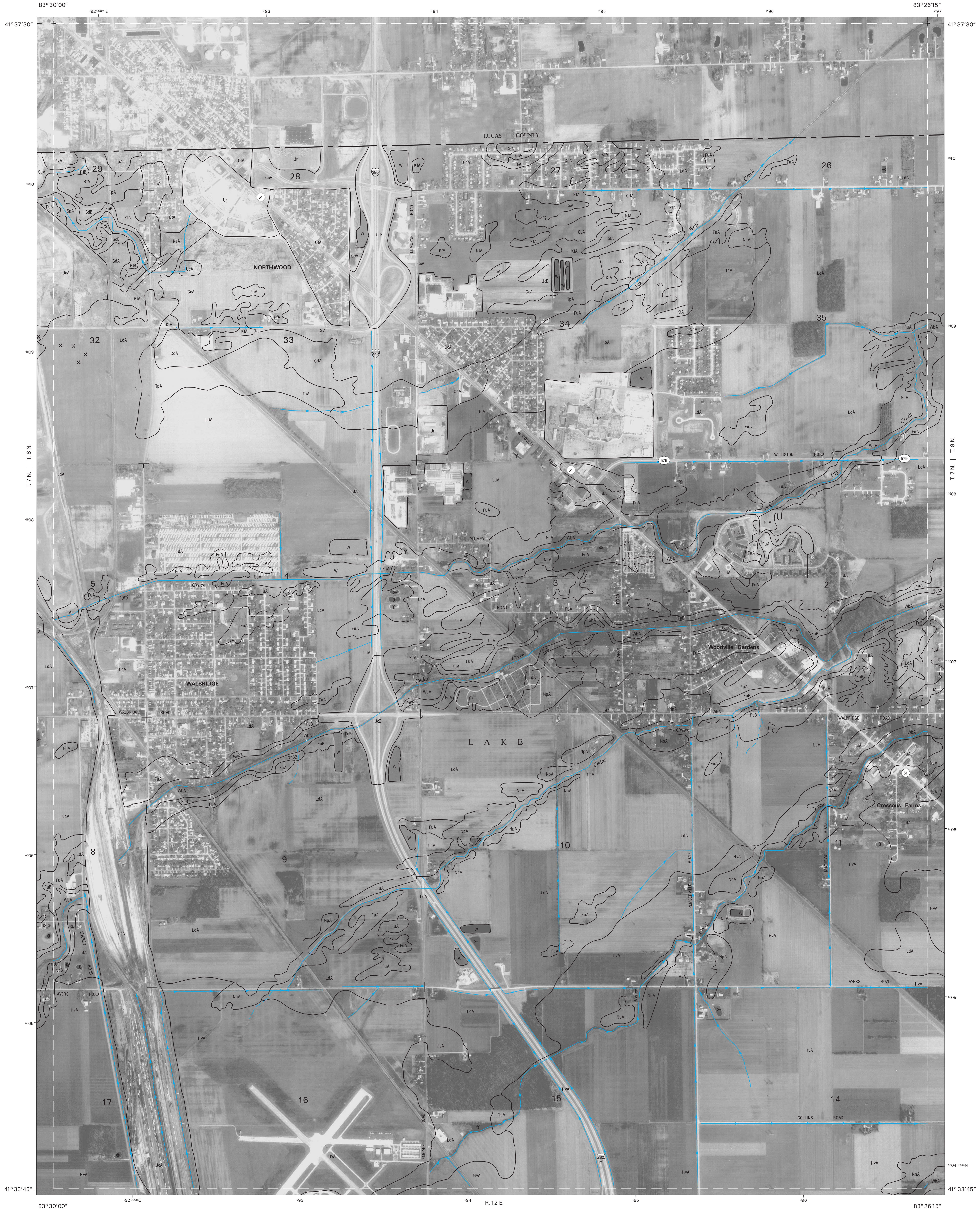
ROSSFORD NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 3 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WALBRIDGE NW QUADRANGLE
SHEET NUMBER 4 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 0 0.5

FEET 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS 0.5 0 0.5

3 ROSSFORD NE
5 WALBRIDGE NE
9 ROSSFORD SE
10 WALBRIDGE SW
11 WALBRIDGE SE

INDEX TO ADJOINING 3.75 MAPS

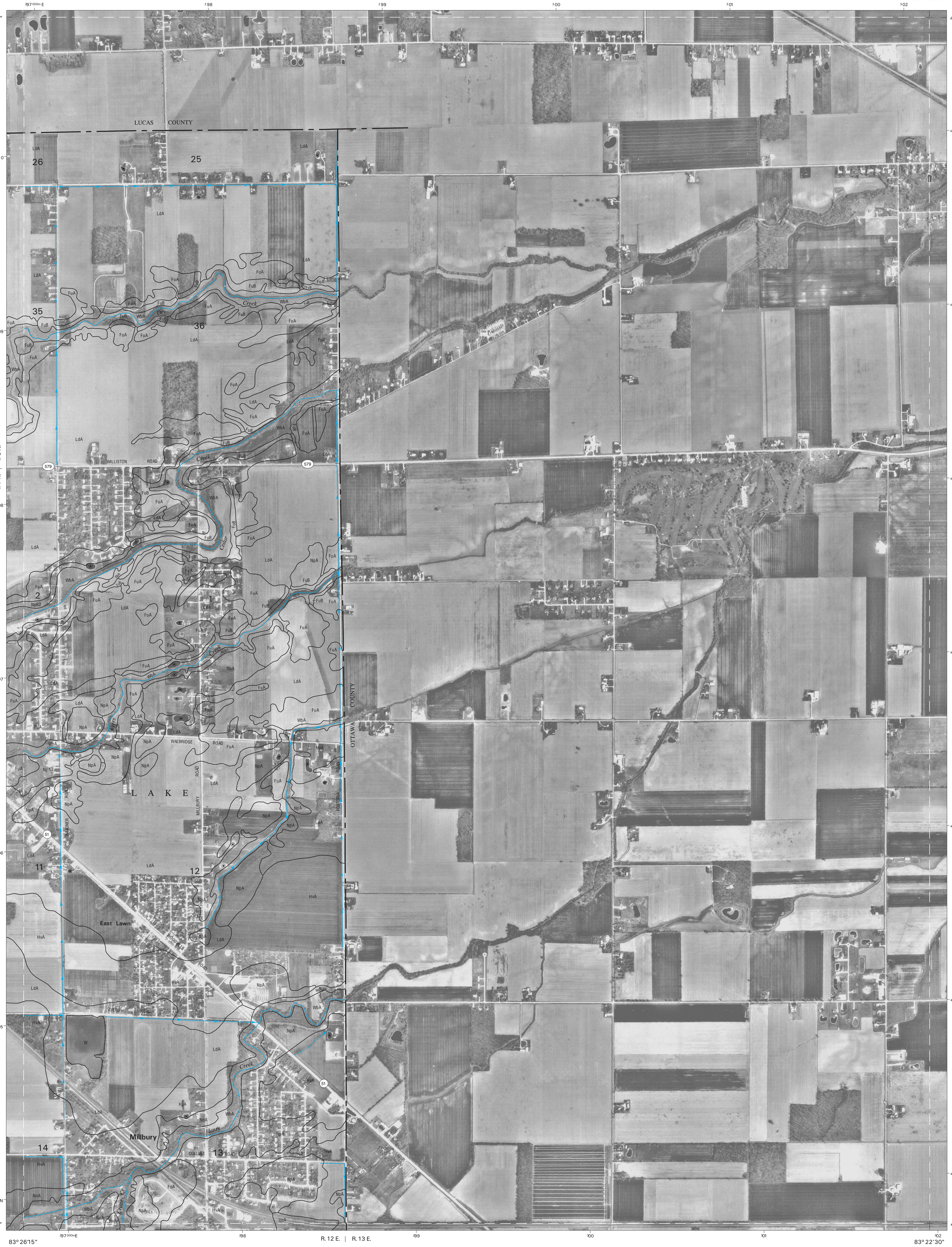
WALBRIDGE NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 4 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WALBRIDGE NE QUADRANGLE
SHEET NUMBER 5 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

4 WALBRIDGE NW
10 WALBRIDGE SW
11 WALBRIDGE SE

WALBRIDGE NE, OHIO

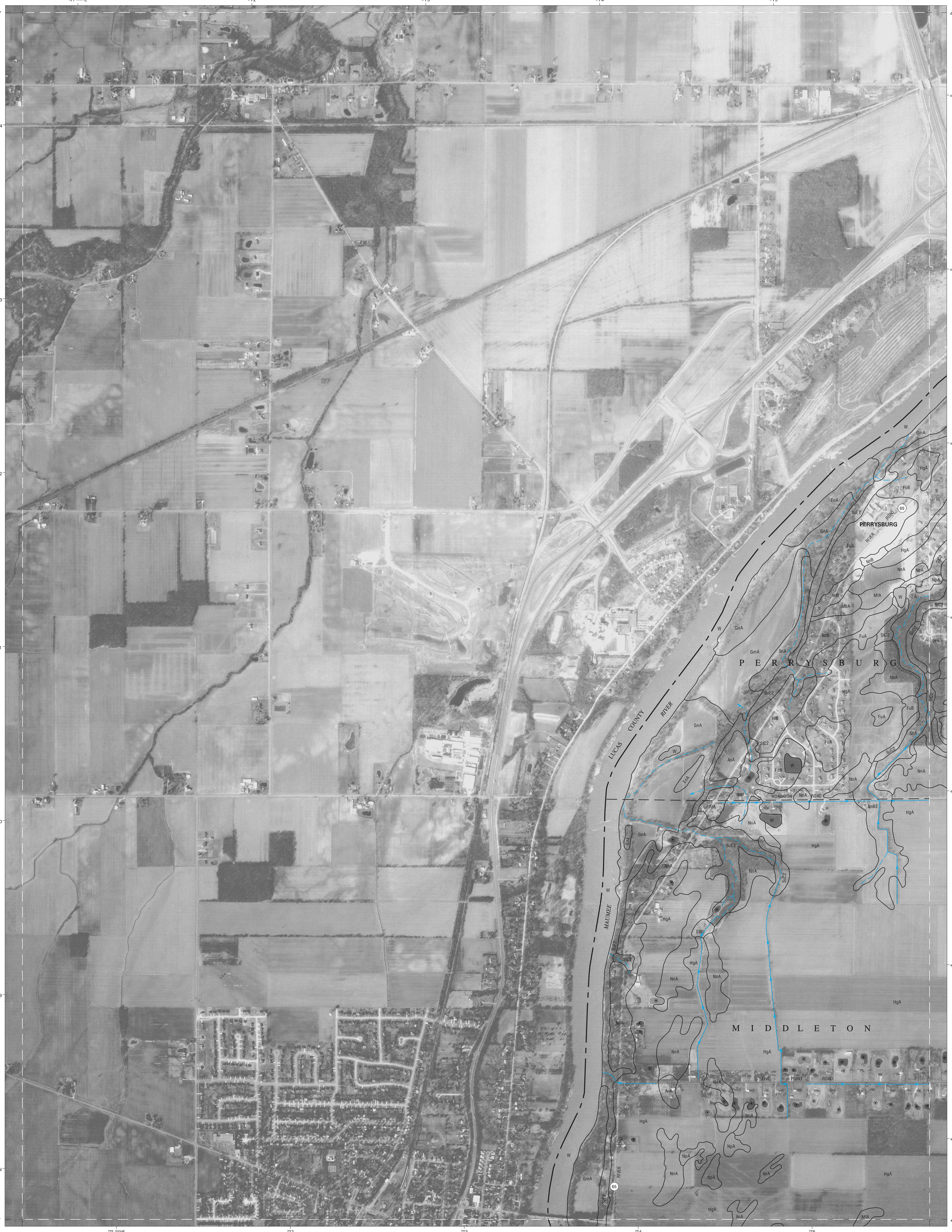
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
MAUMEE SW QUADRANGLE
SHEET NUMBER 6 OF 63

83° 45′00″ 83° 41′15″
41° 33′45″ 41° 33′45″



41° 30′00″ 41° 30′00″
83° 45′00″ 83° 41′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

		1
		7
12	13	14

1 MAUMEE NE
7 MAUMEE SE
12 GRAND RAPIDS NE
13 BOWLING GREEN NORTH NW
14 BOWLING GREEN NORTH NE

INDEX TO ADJOINING 3.75 MAPS

MAUMEE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
MAUMEE SE QUADRANGLE
SHEET NUMBER 7 OF 63

T. 1 | T. 4

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE
LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	1	2
6		8
13	14	15

1 MAUMEE NE
2 ROSSFORD NW
6 MAUMEE SW
8 ROSSFORD SW
13 BOWLING GREEN NORTH NW
14 BOWLING GREEN NORTH NE
15 DUNBRIDGE NW

INDEX TO ADJOINING 3.75 MAPS

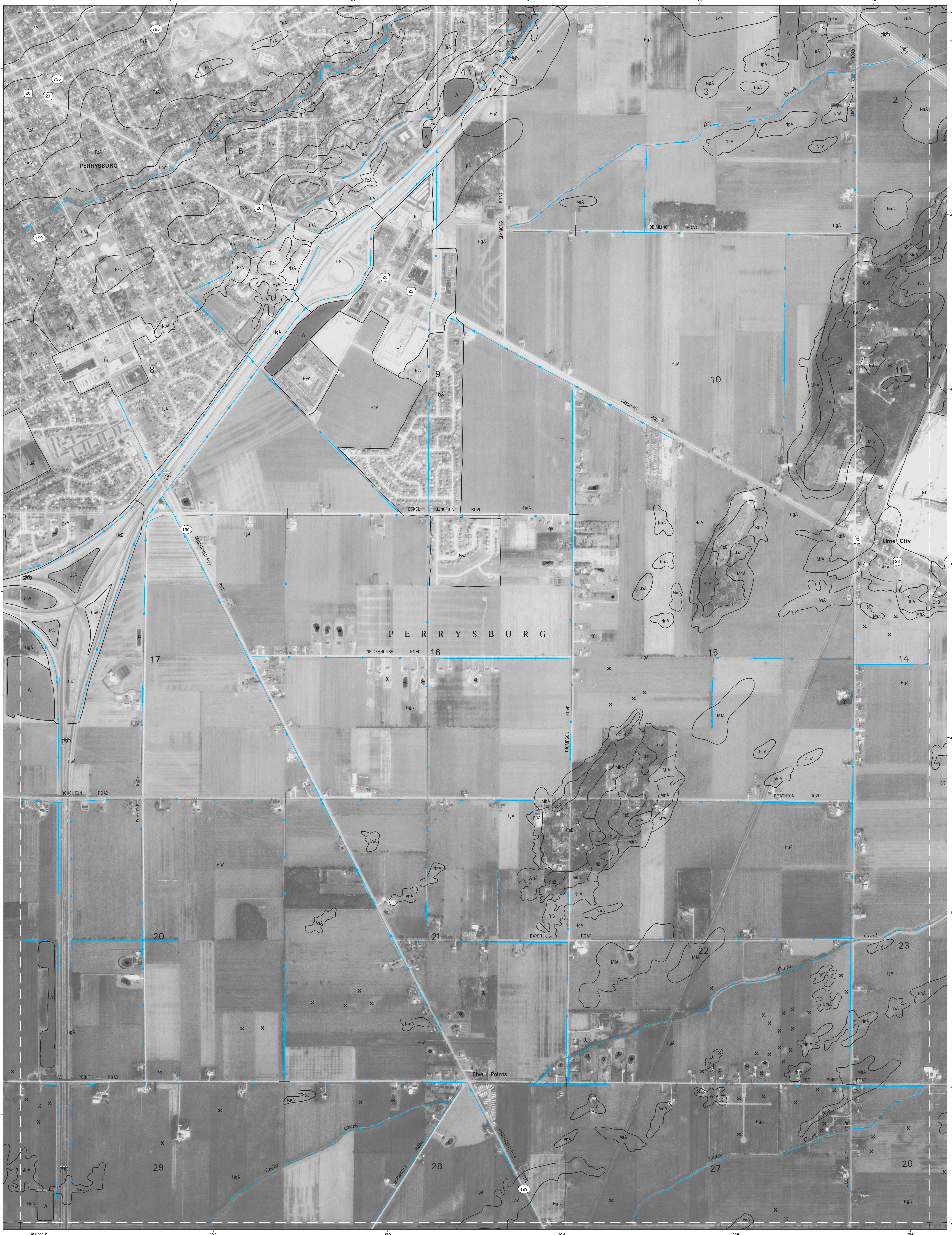
MAUMEE SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 7 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
ROSSFORD SW QUADRANGLE
SHEET NUMBER 8 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1	2	3
7		9
14	15	16

1 MAUMEE NE
2 ROSSFORD NW
3 ROSSFORD NE
7 MAUMEE SE
9 ROSSFORD SE
14 BOWLING GREEN NORTH NE
15 DUNBRIDGE NW
16 DUNBRIDGE NE

INDEX TO ADJOINING 3.75 MAPS

ROSSFORD SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 8 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

2	3	4
8		10
15	16	17

2 ROSSFORD NW
3 ROSSFORD NE
4 WALBRIDGE NW
8 ROSSFORD SW
10 WALBRIDGE SW
15 DUNBRIDGE NW
16 DUNBRIDGE NE
17 PEMBERVILLE NW

INDEX TO ADJOINING 3.75 MAPS

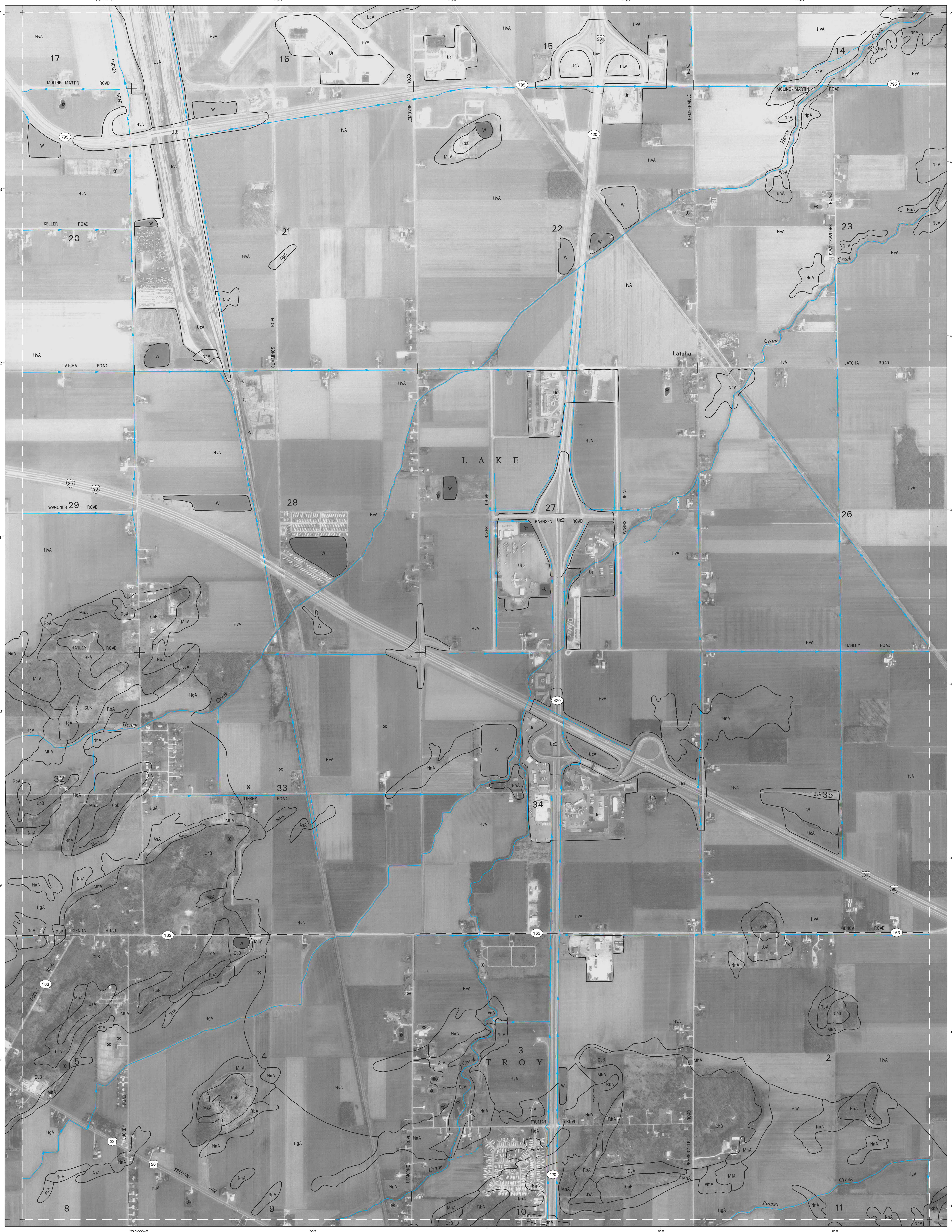
ROSSFORD SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 9 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WALBRIDGE SW QUADRANGLE
SHEET NUMBER 10 OF 63



83° 30′00″ 83° 26′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

3	4	5	3 ROSSFORD NE
			4 WALBRIDGE NW
9		11	5 WALBRIDGE NE
			9 ROSSFORD SE
16	17	18	11 WALBRIDGE SE
			16 DUNBRIDGE NE
			17 PEMBERVILLE NW
			18 PEMBERVILLE NE

INDEX TO ADJOINING 3.75 MAPS

WALBRIDGE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 10 OF 63

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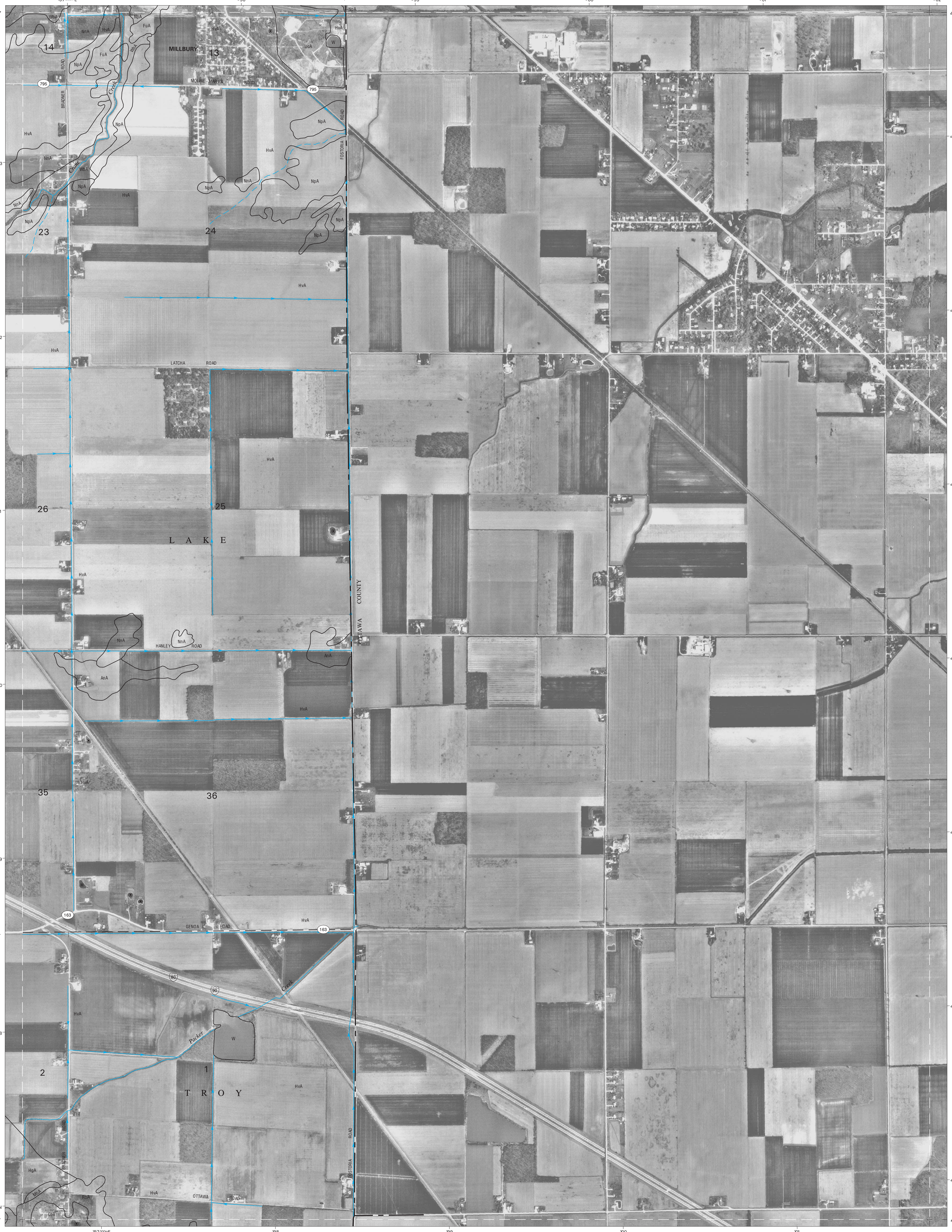
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WALBRIDGE SE QUADRANGLE
SHEET NUMBER 11 OF 63



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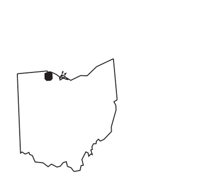
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

4	5	
10	■	
17	18	

4 WALBRIDGE NW
5 WALBRIDGE NE
10 WALBRIDGE SW
17 PEMBERVILLE NW
18 PEMBERVILLE NE

INDEX TO ADJOINING 3.75 MAPS

WALBRIDGE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 11 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
GRAND RAPIDS NE QUADRANGLE
SHEET NUMBER 12 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

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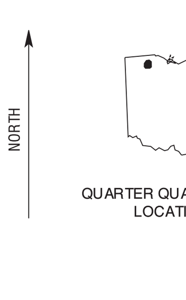
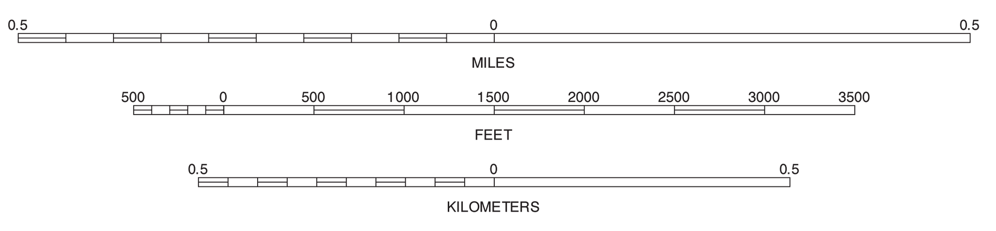
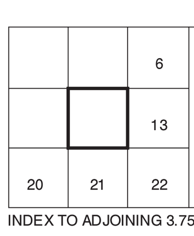


QUARTER QUADRANGLE LOCATION

SCALE 1:12000





6 MAUMEE SW
13 BOWLING GREEN NORTH NW
20 GRAND RAPIDS SW
21 GRAND RAPIDS SE
22 BOWLING GREEN NORTH SW

INDEX TO ADJOINING 3.75 MAPS

GRAND RAPIDS NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 12 OF 63

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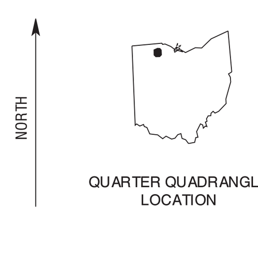
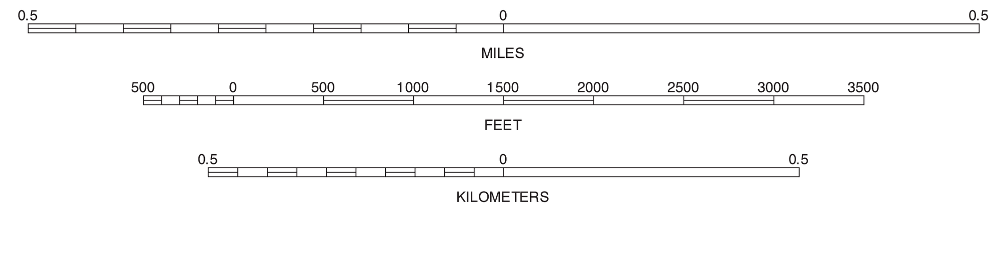
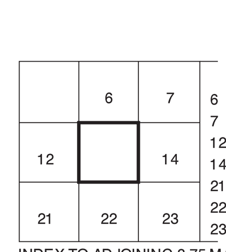






6 MAUMEE SW
7 MAUMEE SE
12 GRAND RAPIDS NE
14 BOWLING GREEN NORTH NE
21 GRAND RAPIDS SE
22 BOWLING GREEN NORTH SW
23 BOWLING GREEN NORTH SE

INDEX TO ADJOINING 3.75 MAPS

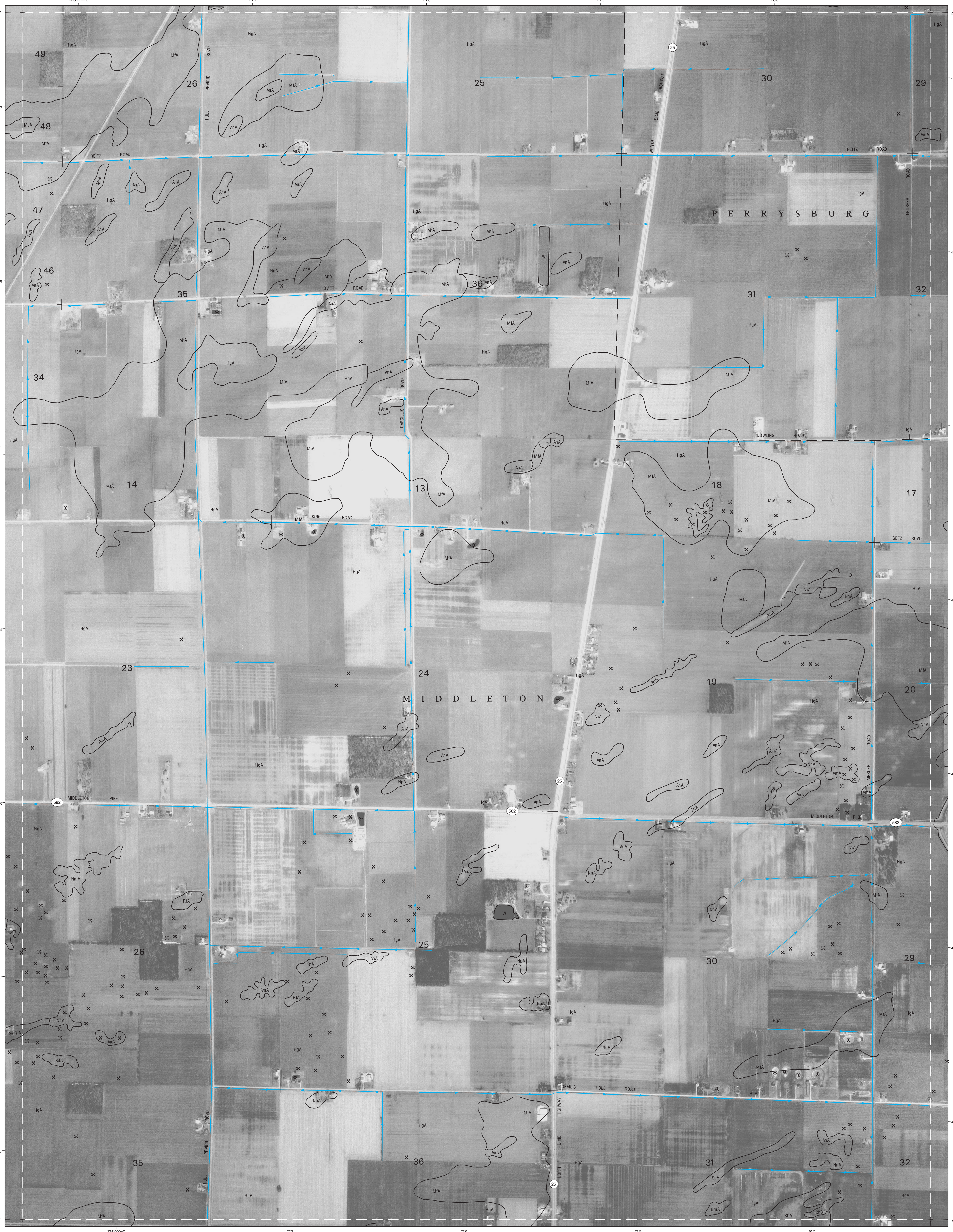
BOWLING GREEN NORTH NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 13 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BOWLING GREEN NORTH NE QUADRANGLE
SHEET NUMBER 14 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

6	7	8
13		15
22	23	24

6 MAUMEE SW
7 MAUMEE SE
8 ROSSFORD SW
13 BOWLING GREEN NORTH NW
15 DUNBRIDGE NW
22 BOWLING GREEN NORTH SW
23 BOWLING GREEN NORTH SE
24 DUNBRIDGE SW

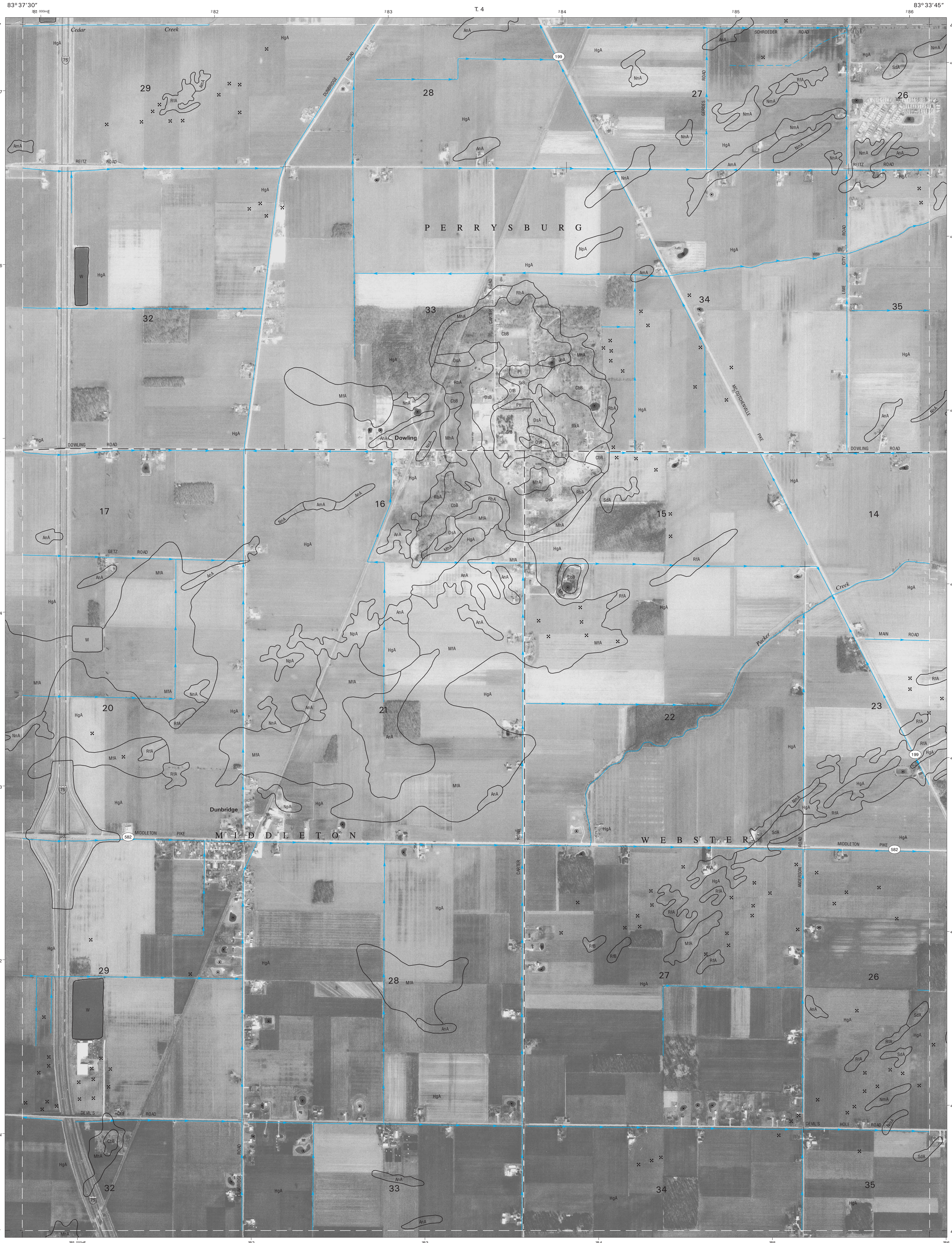
INDEX TO ADJOINING 3.75 MAPS

BOWLING GREEN NORTH NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 14 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
DUNBRIDGE NW QUADRANGLE
SHEET NUMBER 15 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE
LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

7	8	9
14		16
23	24	25

7 MAUMEE SE
8 ROSSFORD SW
9 ROSSFORD SE
14 BOWLING GREEN NORTH NE
16 DUNBRIDGE NE
23 BOWLING GREEN NORTH SE
24 DUNBRIDGE SW
25 DUNBRIDGE SE

INDEX TO ADJOINING 3.75 MAPS

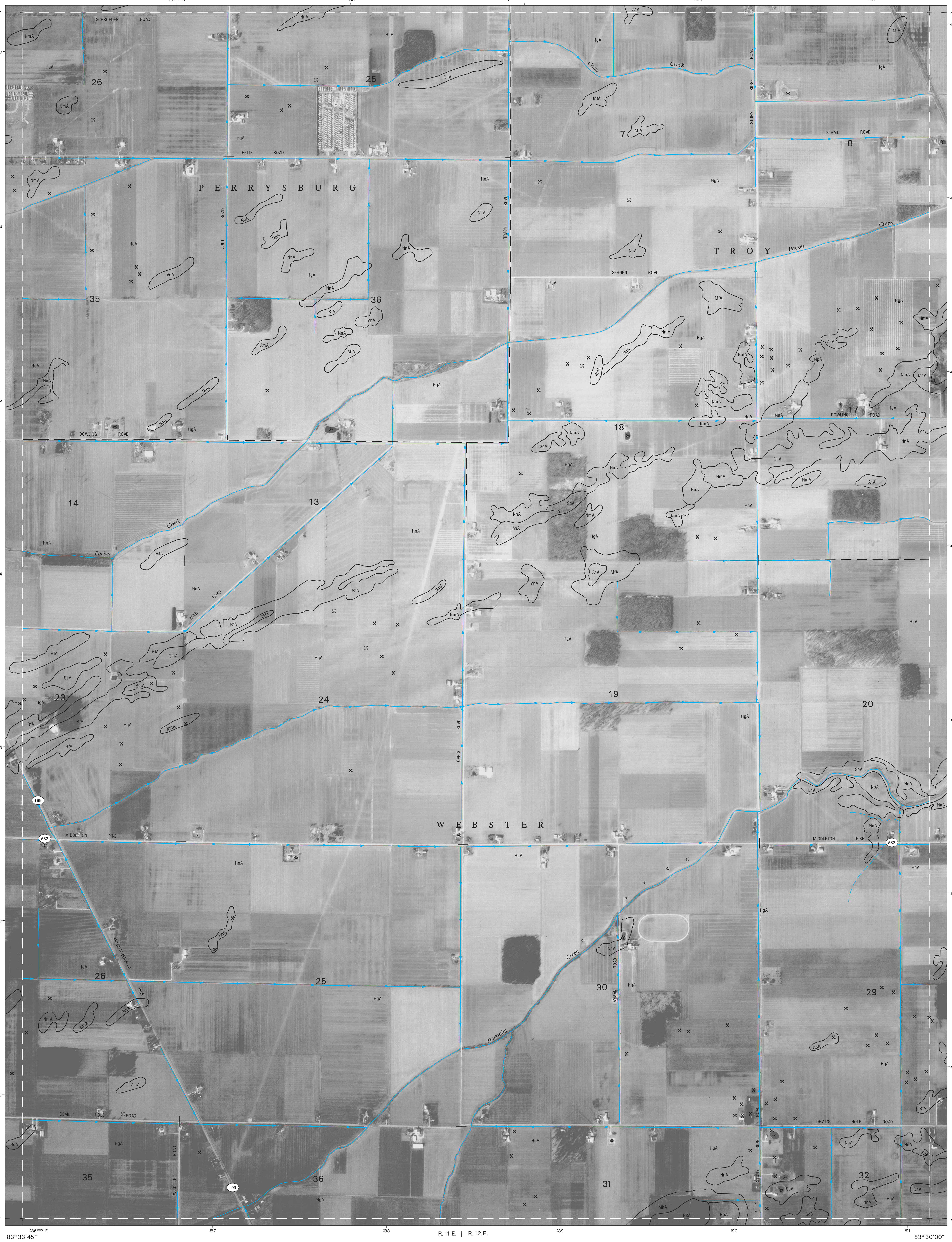
DUNBRIDGE NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
DUNBRIDGE NE QUADRANGLE
SHEET NUMBER 16 OF 63

83° 33′45″ 41° 30′00″ T. 4 | R. 12 E. 83° 30′00″ 41° 30′00″



41° 26′15″ 83° 33′45″ R. 11 E. | R. 12 E. 41° 26′15″ 83° 30′00″

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

8	9	10
15		17
24	25	26

8 ROSSFORD SW
9 ROSSFORD SE
10 WALBRIDGE SW
15 DUNBRIDGE NW
17 PEMBERVILLE NW
24 DUNBRIDGE SW
25 DUNBRIDGE SE
26 PEMBERVILLE SW

INDEX TO ADJOINING 3.75 MAPS

DUNBRIDGE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 16 OF 63

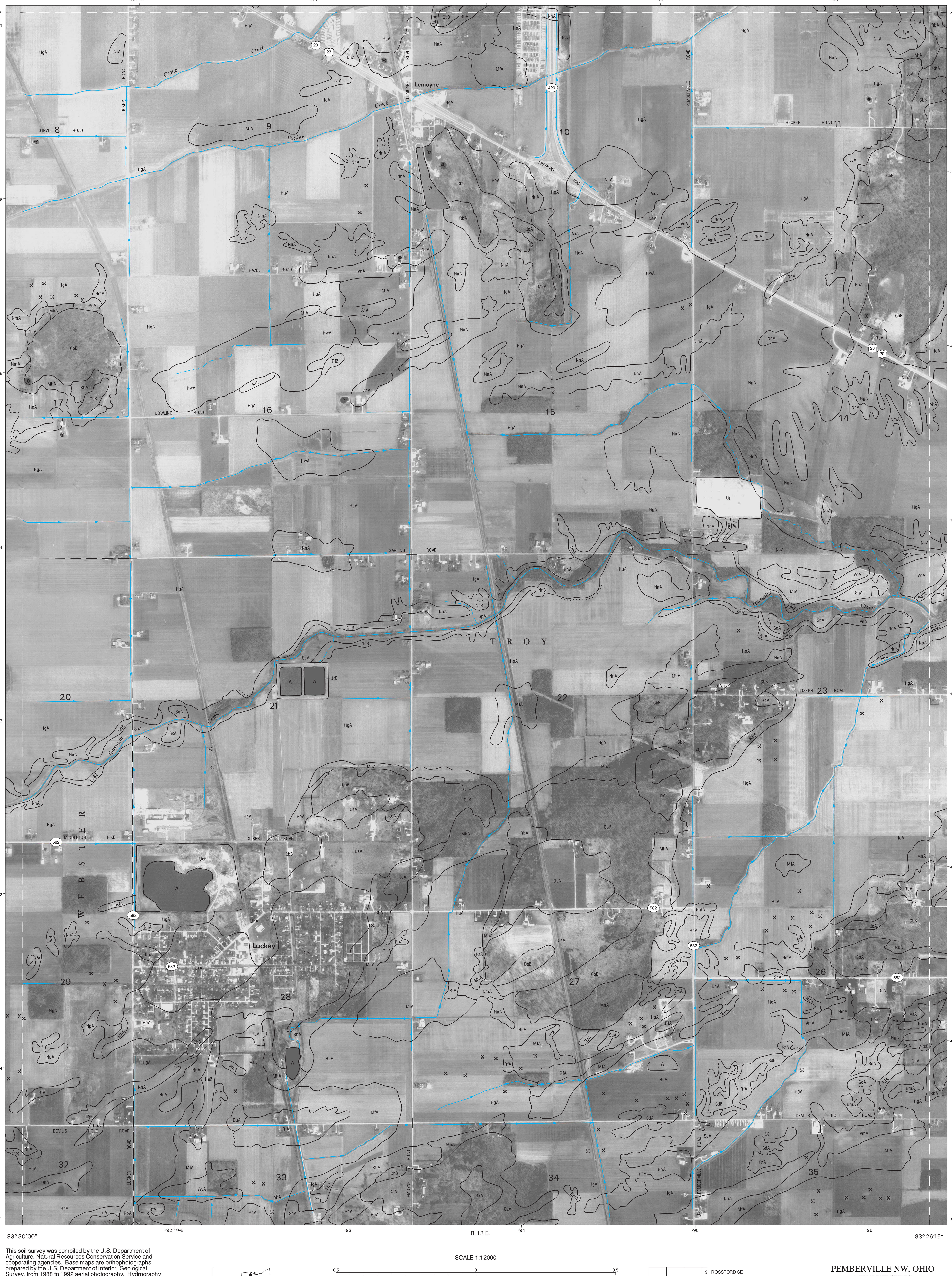
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
PEMBERVILLE NW QUADRANGLE
SHEET NUMBER 17 OF 63

83° 30′00″ | 292 000m E | 293 | R. 12 E. | 295 | 296 | 83° 26′15″

41° 30′00″ | 41° 30′00″



41° 26′15″ | 41° 26′15″

83° 30′00″ | 292 000m E | 293 | R. 12 E. | 294 | 295 | 296 | 83° 26′15″

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

9	10	11
16		18
25	26	27

9 ROSSFORD SE
10 WALBRIDGE SW
11 WALBRIDGE SE
16 DUNBRIDGE NE
18 PEMBERVILLE NE
25 DUNBRIDGE SE
26 PEMBERVILLE SW
27 PEMBERVILLE SE

INDEX TO ADJOINING 3.75 MAPS

PEMBERVILLE NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 17 OF 63

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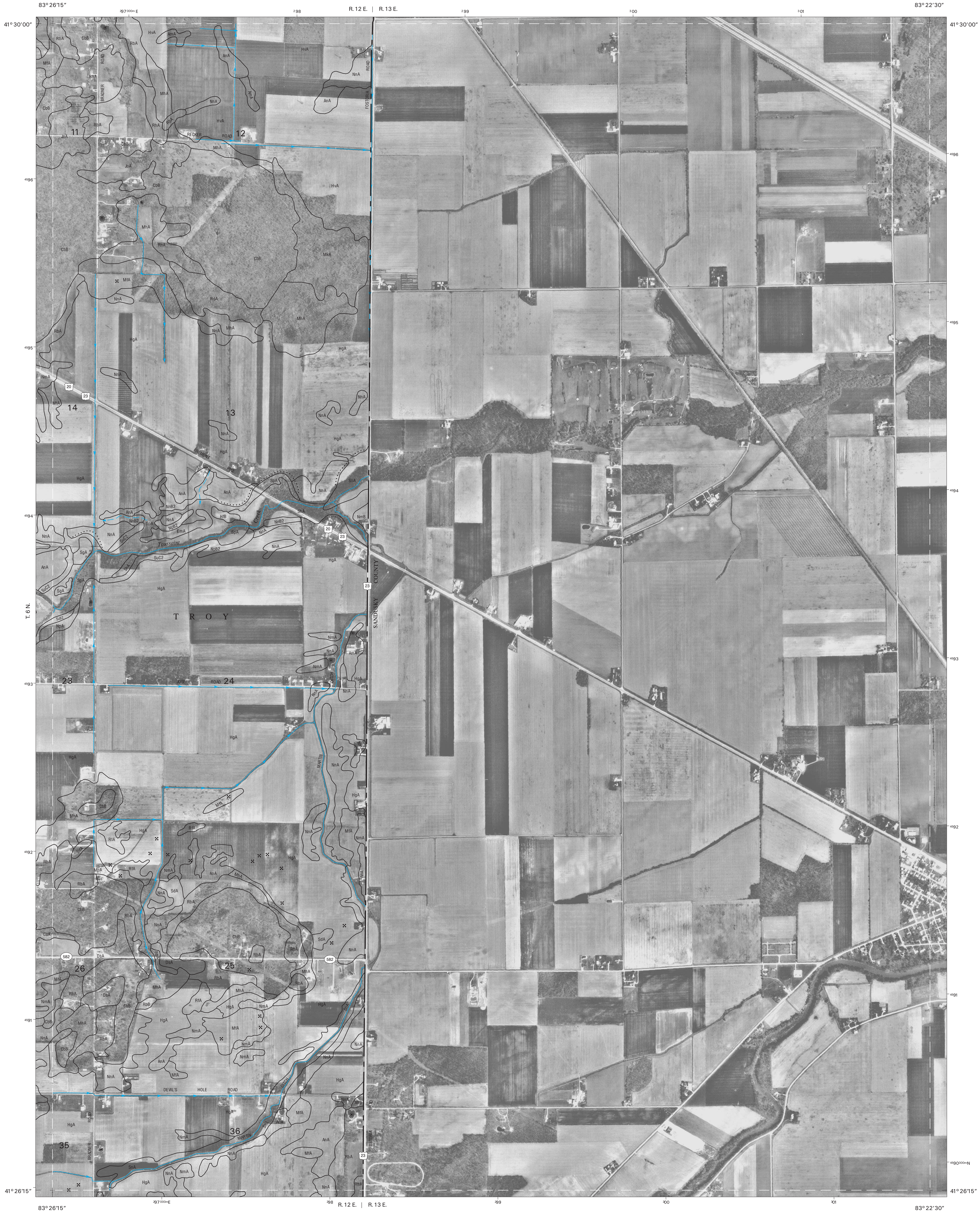
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
PEMBERVILLE NE QUADRANGLE
SHEET NUMBER 18 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

10	11	
17	■	
26	27	

10 WALBRIDGE SW
11 WALBRIDGE SE
17 PEMBERVILLE NW
26 PEMBERVILLE SW
27 PEMBERVILLE SE

INDEX TO ADJOINING 3.75 MAPS

PEMBERVILLE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 18 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
COLTON SE QUADRANGLE
SHEET NUMBER 19 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

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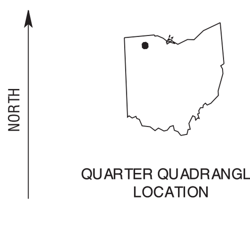
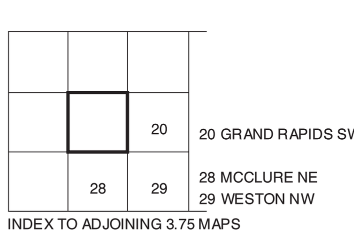


SCALE 1:12000

MILES

FEET

KILOMETERS



INDEX TO ADJOINING 3.75 MAPS

COLTON SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 19 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

		12
19		21
28	29	30

12 GRAND RAPIDS NE
19 COLTON SE
21 GRAND RAPIDS SE
28 MCCLURE NE
29 WESTON NW
30 WESTON NE

INDEX TO ADJOINING 3.75 MAPS

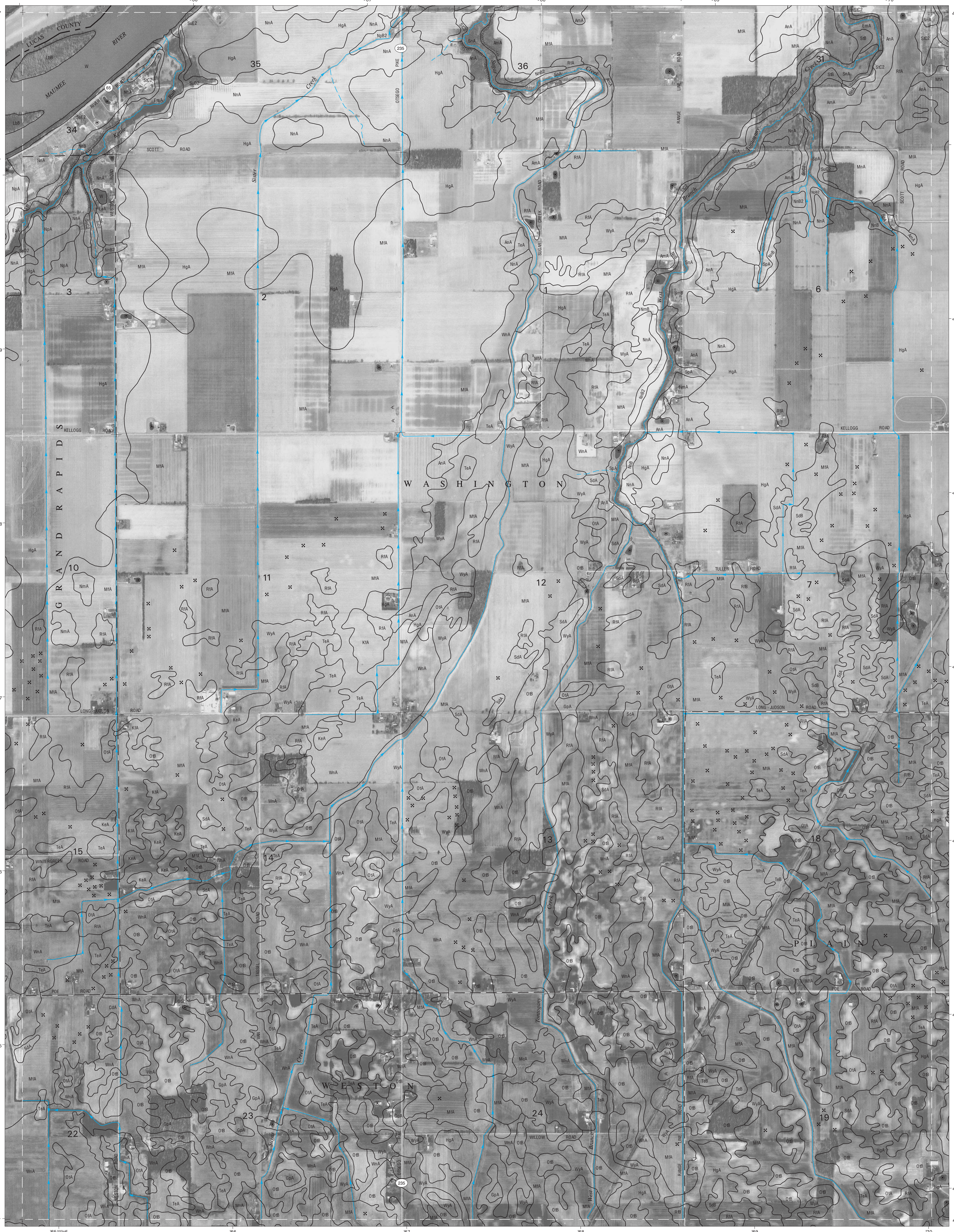
GRAND RAPIDS SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 20 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
GRAND RAPIDS SE QUADRANGLE
SHEET NUMBER 21 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

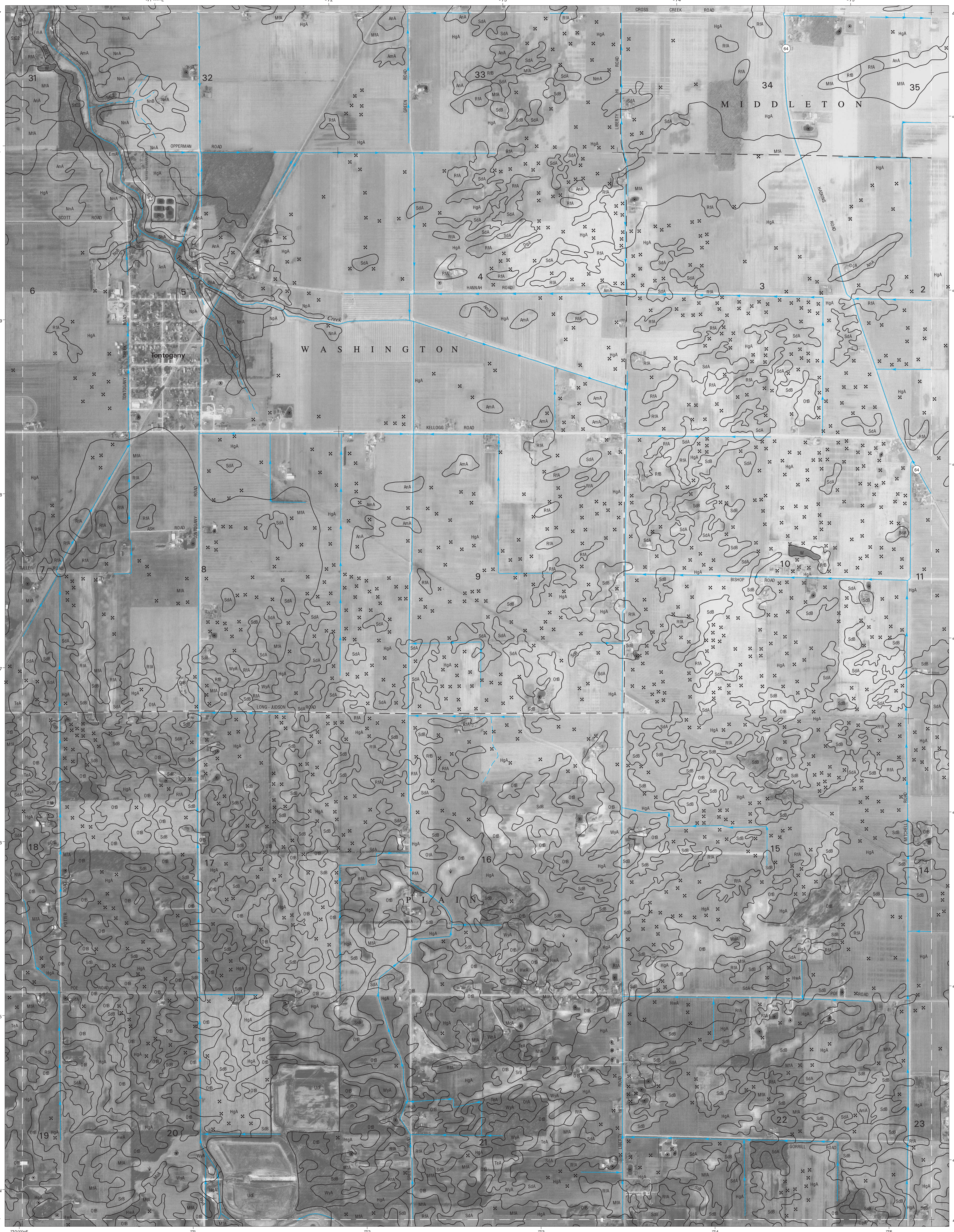
	12	13
20		22
29	30	31

12 GRAND RAPIDS NE
13 BOWLING GREEN NORTH NW
20 GRAND RAPIDS SW
22 BOWLING GREEN NORTH SW
29 WESTON NW
30 WESTON NE
31 BOWLING GREEN SOUTH NW

INDEX TO ADJOINING 3.75 MAPS

GRAND RAPIDS SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 21 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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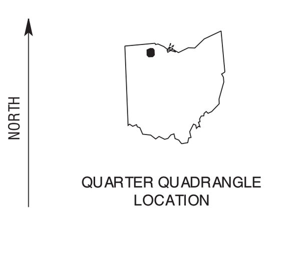
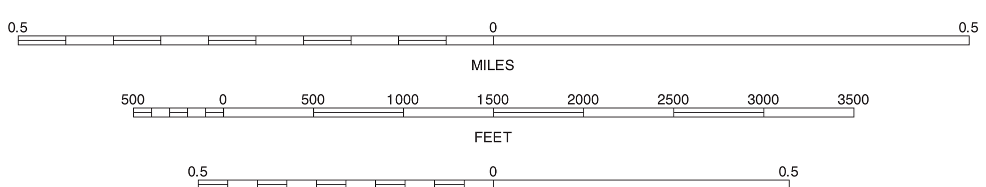


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



12	13	14
21		23
30	31	32

12 GRAND RAPIDS NE
13 BOWLING GREEN NORTH NW
14 BOWLING GREEN NORTH NE
21 GRAND RAPIDS SE
23 BOWLING GREEN NORTH SE
30 WESTON NE
31 BOWLING GREEN SOUTH NW
32 BOWLING GREEN SOUTH NE

INDEX TO ADJOINING 3.75 MAPS

BOWLING GREEN NORTH SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 22 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

SCALE 1:12000

MILES

FEET

KILOMETERS

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

13	14	15
22		24
31	32	33

13 BOWLING GREEN NORTH NW
14 BOWLING GREEN NORTH NE
15 DUNBRIDGE NW
22 BOWLING GREEN NORTH SW
24 DUNBRIDGE SW
31 BOWLING GREEN SOUTH NW
32 BOWLING GREEN SOUTH NE
33 JERRY CITY NW

INDEX TO ADJOINING 3.75 MAPS

BOWLING GREEN NORTH SE, OHIO

3.75 MINUTE SERIES

SHEET NUMBER 23 OF 63

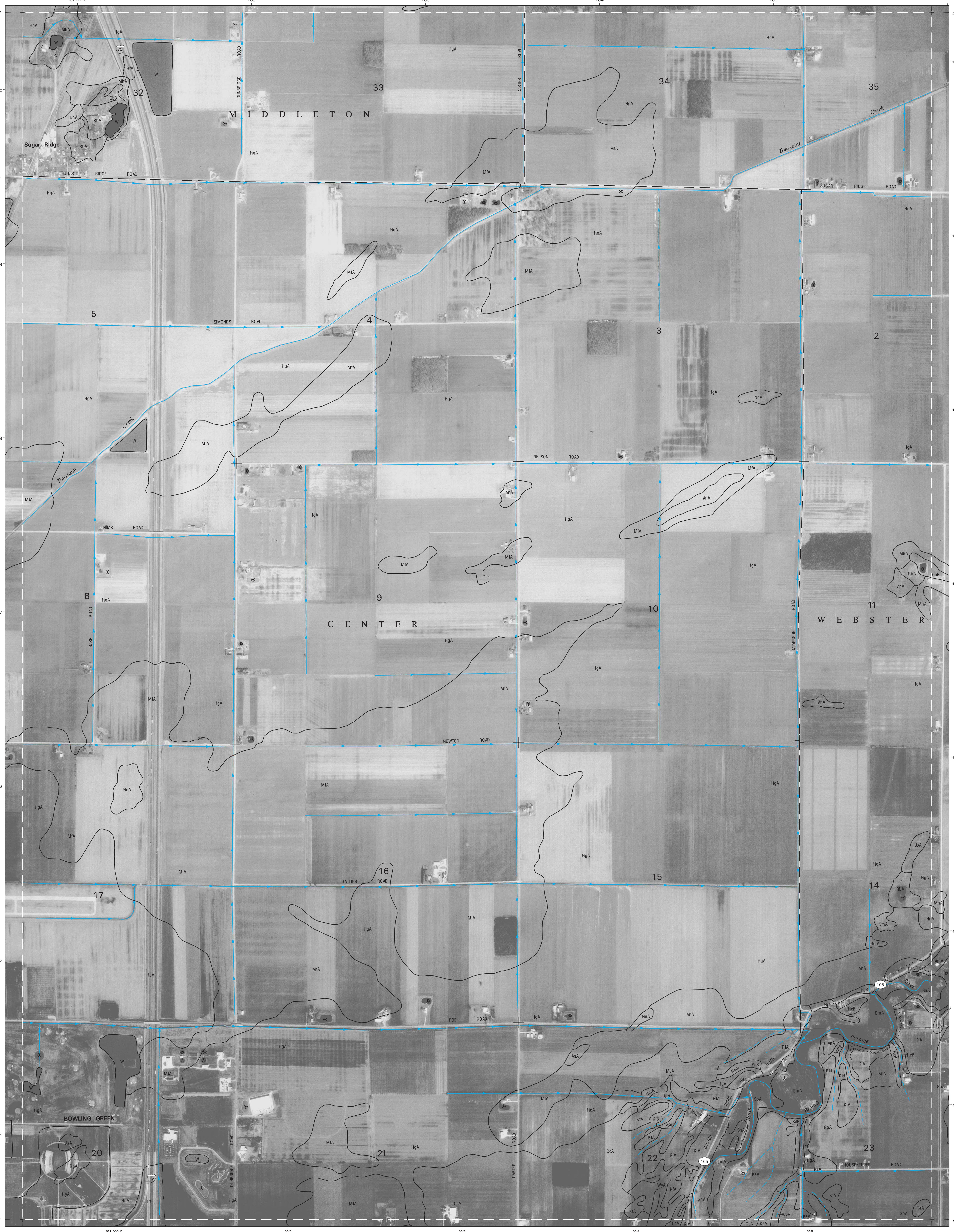
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
DUNBRIDGE SW QUADRANGLE
SHEET NUMBER 24 OF 63

83° 37′30″ — R. 11 E. — 83° 33′45″

41° 26′15″



41° 22′30″

83° 37′30″ — ^{2}81 ^{000m}E — ^{2}82 — R. 11 E. — ^{2}84 — ^{2}85 — 83° 33′45″

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5 MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500 FEET

0.5 — 0 — 0.5 KILOMETERS

14	15	16
23		25
32	33	34

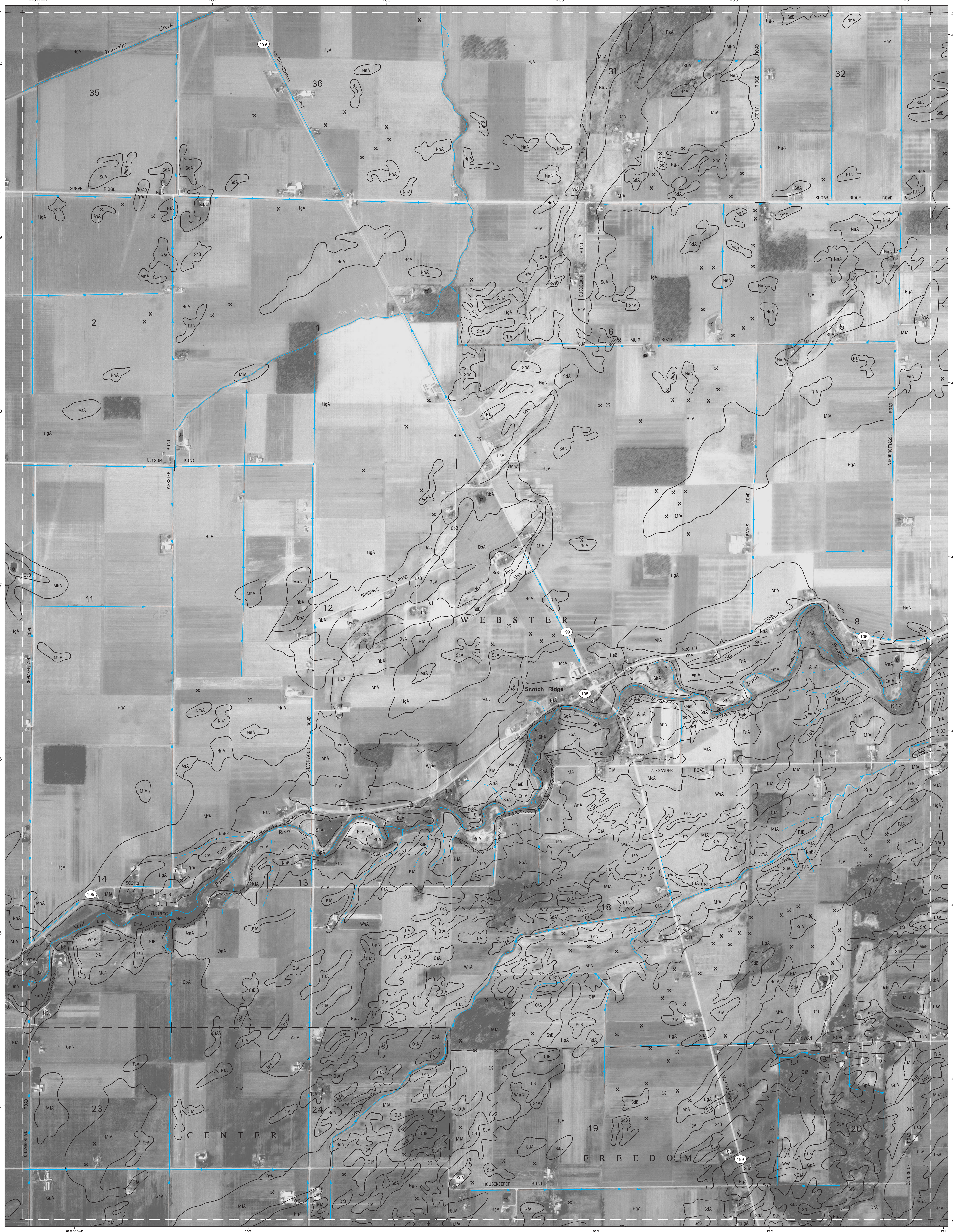
14 BOWLING GREEN NORTH NE
15 DUNBRIDGE NW
16 DUNBRIDGE NE
23 BOWLING GREEN NORTH SE
25 DUNBRIDGE SE
32 BOWLING GREEN SOUTH NE
33 JERRY CITY NW
34 JERRY CITY NE

INDEX TO ADJOINING 3.75 MAPS

DUNBRIDGE SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 24 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

15	16	17
24		26
33	34	35

15 DUNBRIDGE NW
16 DUNBRIDGE NE
17 PEMBERVILLE NW
24 DUNBRIDGE SW
26 PEMBERVILLE SW
33 JERRY CITY NW
34 JERRY CITY NE
35 BRADNER NW

INDEX TO ADJOINING 3.75 MAPS

DUNBRIDGE SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 25 OF 63

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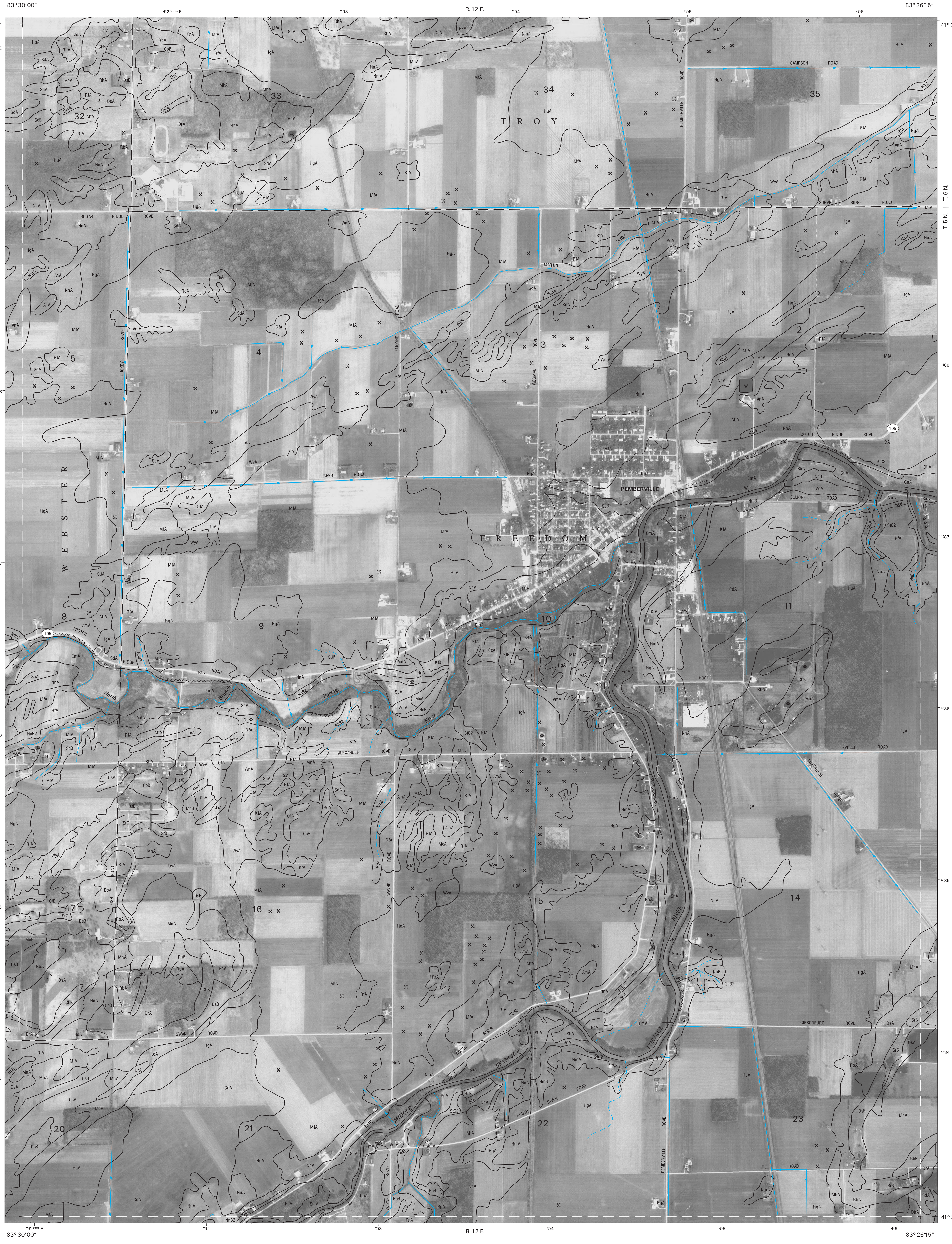
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
PEMBERVILLE SW QUADRANGLE
SHEET NUMBER 26 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

16	17	18
25		27
34	35	36

16 DUNBRIDGE NE
17 PEMBERVILLE NW
18 PEMBERVILLE NE
25 DUNBRIDGE SE
27 PEMBERVILLE SE
34 JERRY CITY NE
35 BRADNER NW
36 BRADNER NE

INDEX TO ADJOINING 3.75 MAPS

PEMBERVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
PEMBERVILLE SE QUADRANGLE
SHEET NUMBER 27 OF 63

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

17	18	
26		
35	36	

17 PEMBERVILLE NW
18 PEMBERVILLE NE
26 PEMBERVILLE SW
35 BRADNER NW
36 BRADNER NE

INDEX TO ADJOINING 3.75 MAPS

PEMBERVILLE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 27 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
MCCLURE NE QUADRANGLE
SHEET NUMBER 28 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

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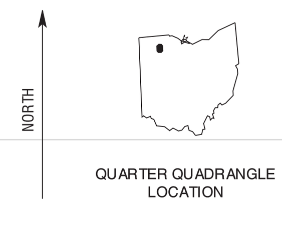
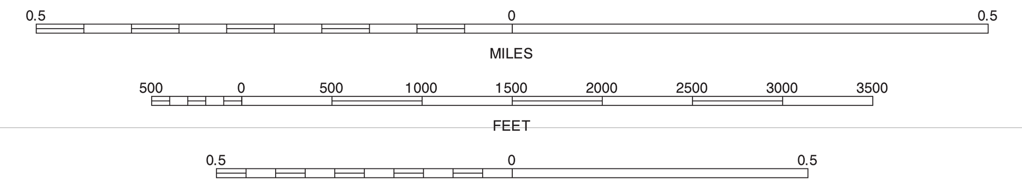


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



	19	20	19 COLTON SE 20 GRAND RAPIDS SW
		29	29 WESTON NW
	37	38	37 MCCLURE SE 38 WESTON SW

INDEX TO ADJOINING 3.75 MAPS

MCCLURE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 28 OF 63

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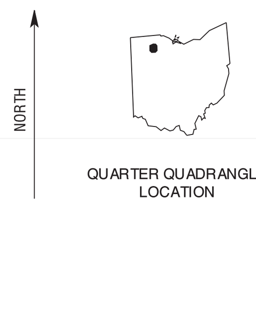

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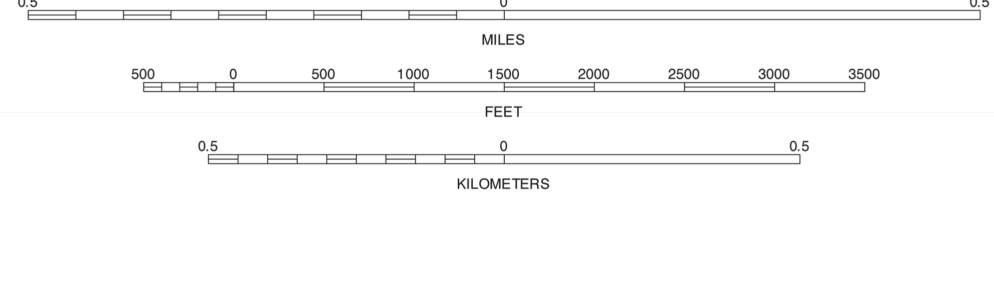

19	20	21
28		30
37	38	39

19 COLTON SE
20 GRAND RAPIDS SW
21 GRAND RAPIDS SE
28 MCCLURE NE
30 WESTON NE
37 MCCLURE SE
38 WESTON SW
39 WESTON SE

INDEX TO ADJOINING 3.75 MAPS

WESTON NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 29 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WESTON NE QUADRANGLE
SHEET NUMBER 30 OF 63

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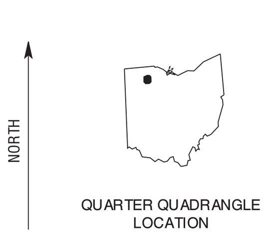

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 — 0 — 0.5

FEET: 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS: 0.5 — 0 — 0.5

20	21	22
29		31
38	39	40

20 GRAND RAPIDS SW
21 GRAND RAPIDS SE
22 BOWLING GREEN NORTH SW
29 WESTON NW
31 BOWLING GREEN SOUTH NW
38 WESTON SW
39 WESTON SE
40 BOWLING GREEN SOUTH SW

INDEX TO ADJOINING 3.75 MAPS

WESTON NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 30 OF 63

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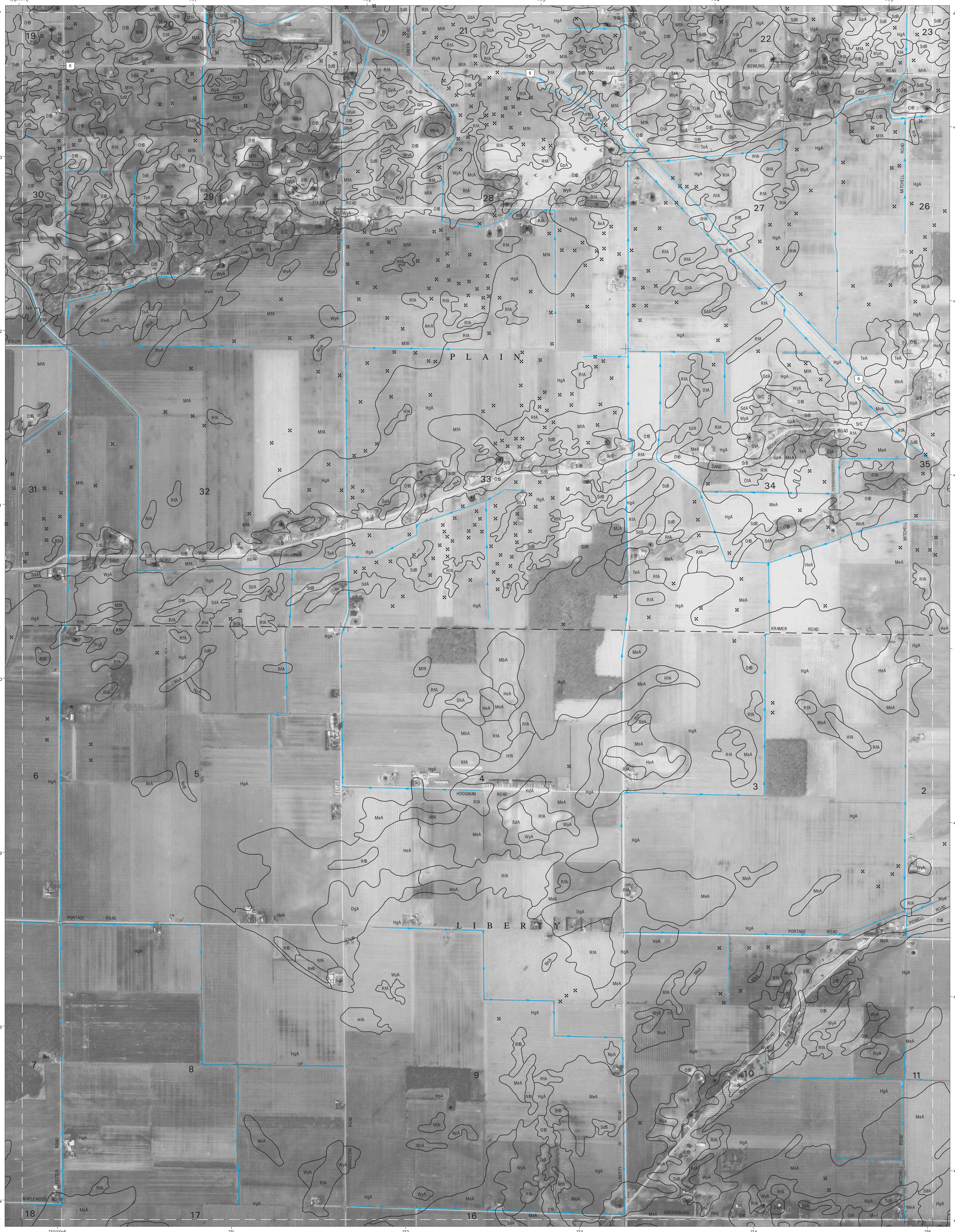
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BOWLING GREEN SOUTH NW QUADRANGLE
SHEET NUMBER 31 OF 63

83° 45′00″ 83° 41′15″
41° 22′30″ 41° 22′30″



41° 18′45″ 41° 18′45″
83° 45′00″ R. 10 E. 83° 41′15″

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

21	22	23
30		32
39	40	41

21 GRAND RAPIDS SE
22 BOWLING GREEN NORTH SW
23 BOWLING GREEN NORTH SE
30 WESTON NE
32 BOWLING GREEN SOUTH NE
39 WESTON SE
40 BOWLING GREEN SOUTH SW
41 BOWLING GREEN SOUTH SE

INDEX TO ADJOINING 3.75 MAPS

BOWLING GREEN SOUTH NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 31 OF 63

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UNITED STATES
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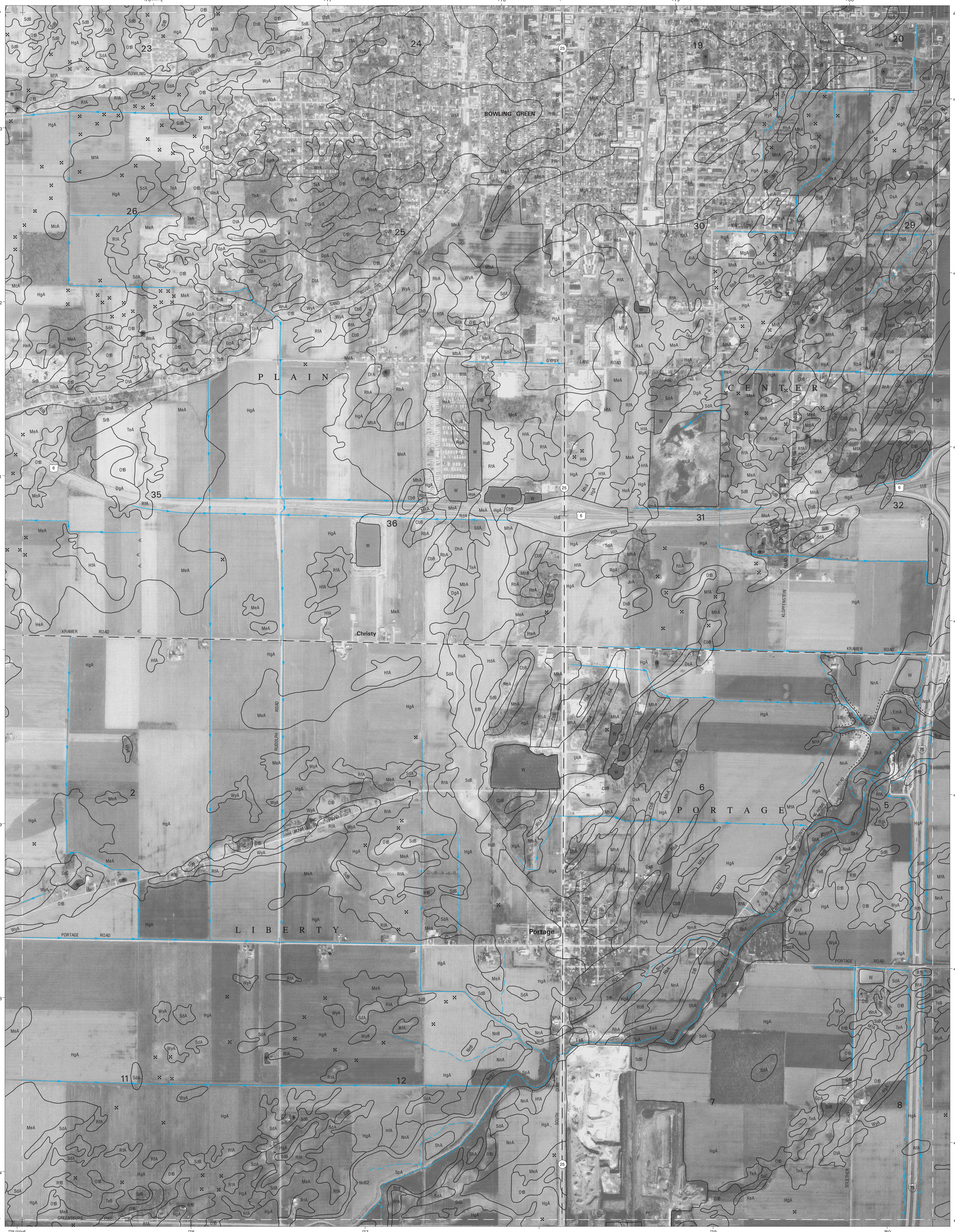
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BOWLING GREEN SOUTH NE QUADRANGLE
SHEET NUMBER 32 OF 63



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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

22	23	24
31		33
40	41	42

22 BOWLING GREEN NORTH SW
23 BOWLING GREEN NORTH SE
24 DUNBRIDGE SW
31 BOWLING GREEN SOUTH NW
33 JERRY CITY NW
40 BOWLING GREEN SOUTH SW
41 BOWLING GREEN SOUTH SE
42 JERRY CITY SW

INDEX TO ADJOINING 3.75 MAPS

BOWLING GREEN SOUTH NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 63

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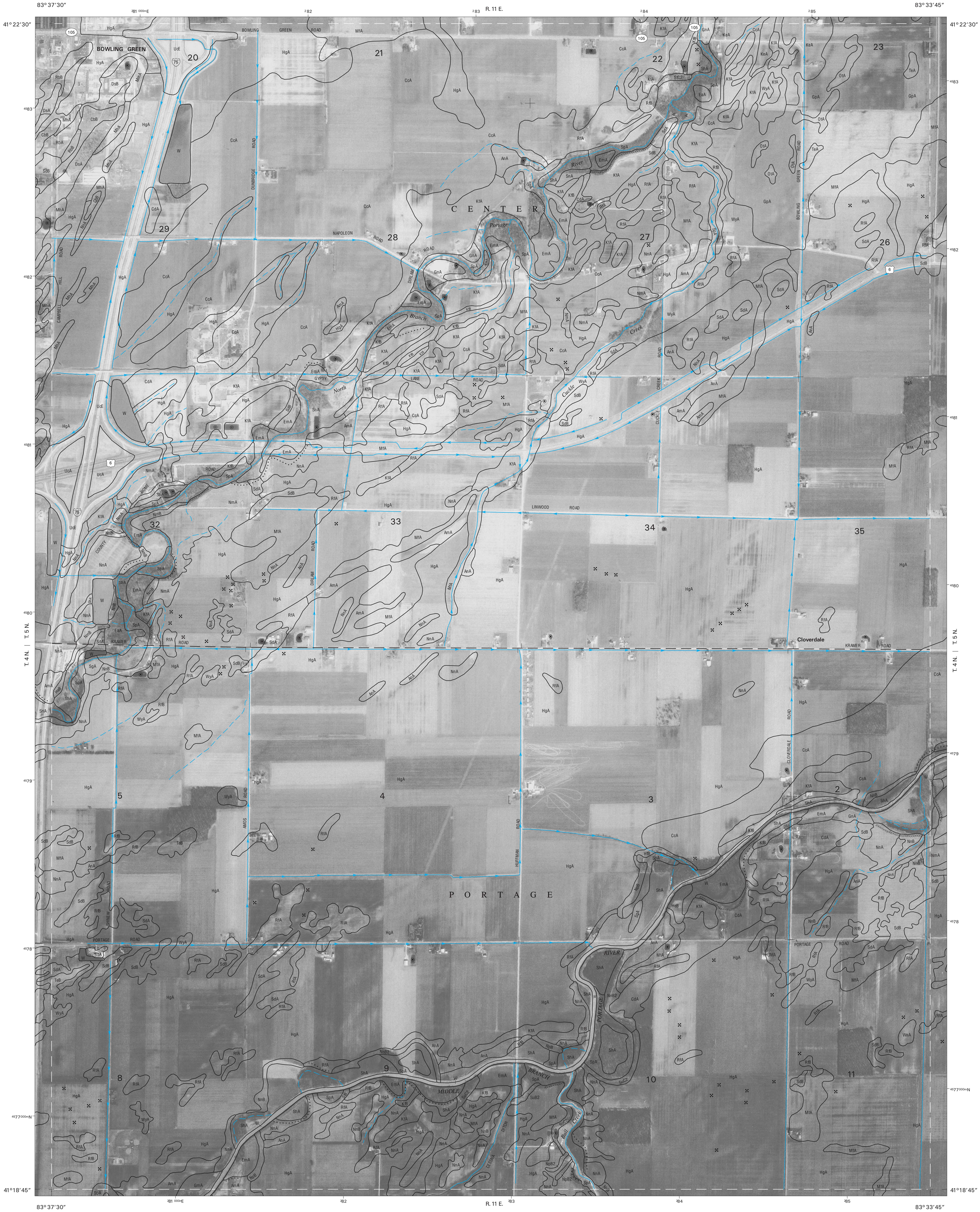
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
JERRY CITY NW QUADRANGLE
SHEET NUMBER 33 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

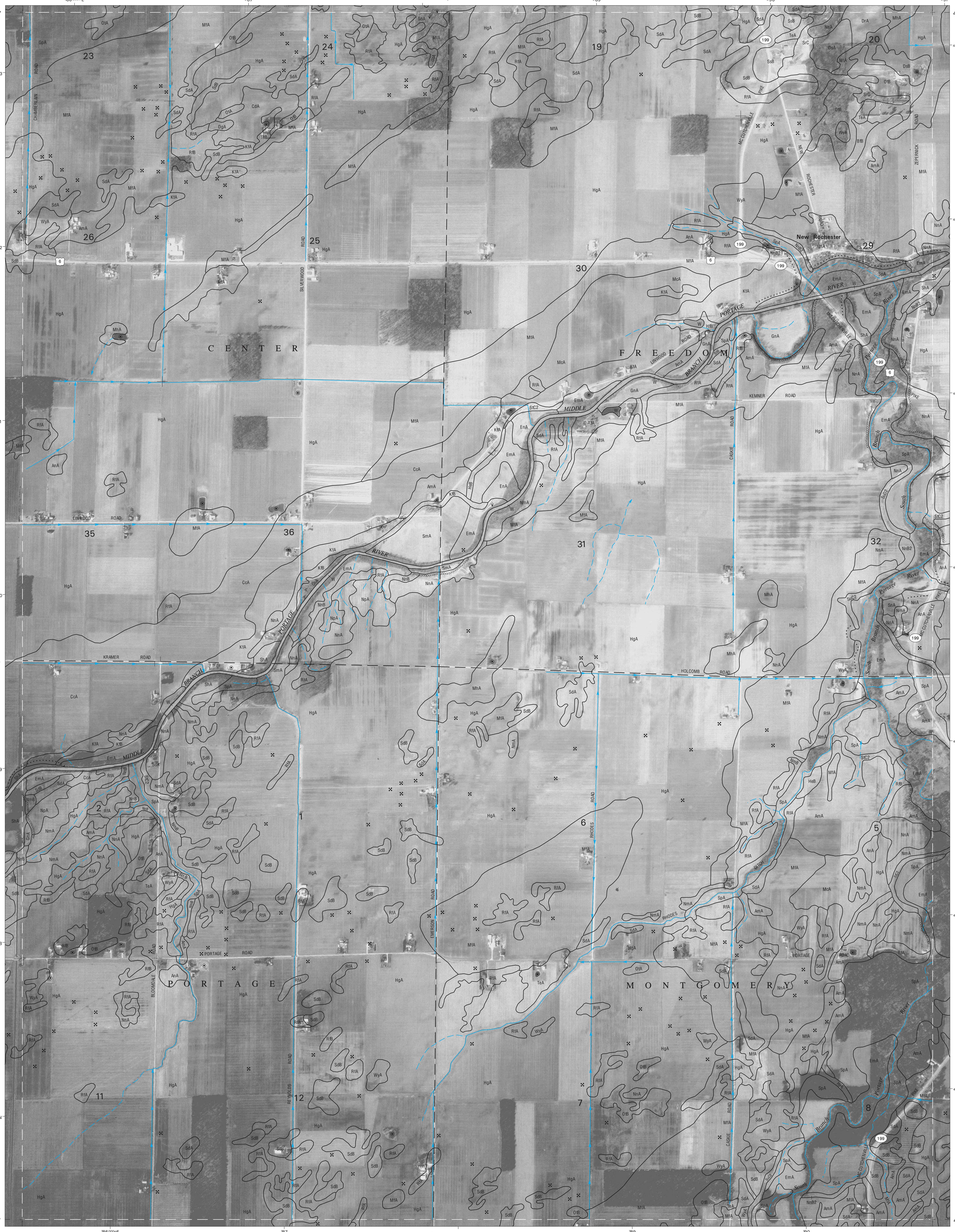
23	24	25
32		34
41	42	43

23 BOWLING GREEN NORTH SE
24 DUNBRIDGE SW
25 DUNBRIDGE SE
32 BOWLING GREEN SOUTH NE
34 JERRY CITY NE
41 BOWLING GREEN SOUTH SE
42 JERRY CITY SW
43 JERRY CITY SE

INDEX TO ADJOINING 3.75 MAPS

JERRY CITY NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 33 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

24	25	26
33		35
42	43	44

24 DUNBRIDGE SW
25 DUNBRIDGE SE
26 PEMBERVILLE SW
33 JERRY CITY NW
35 BRADNER NW
42 JERRY CITY SW
43 JERRY CITY SE
44 BRADNER SW

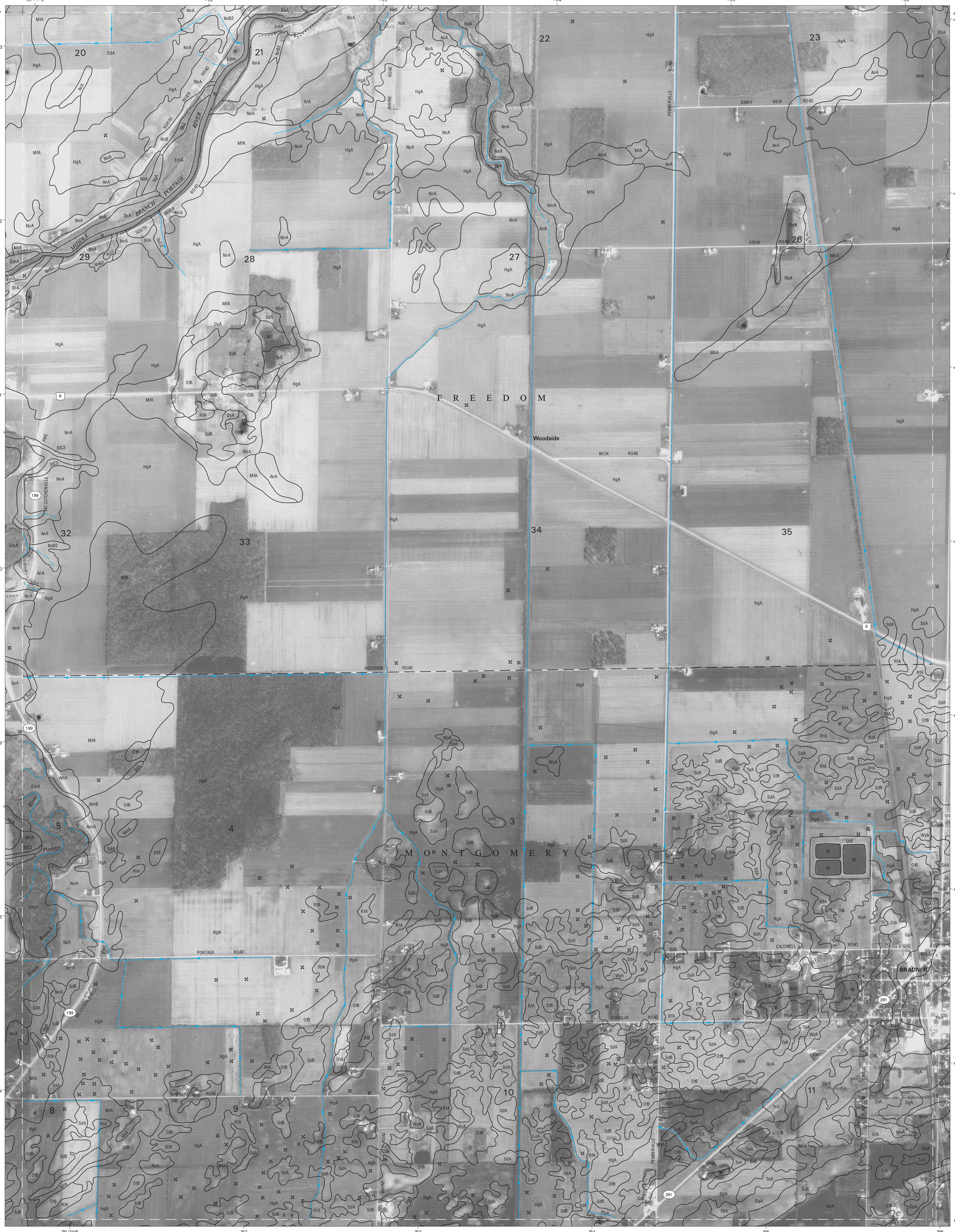
INDEX TO ADJOINING 3.75 MAPS

JERRY CITY NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BRADNER NW QUADRANGLE
SHEET NUMBER 35 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

25	26	27
34		36
43	44	45

25 DUNBRIDGE SE
26 PEMBERVILLE SW
27 PEMBERVILLE SE
34 JERRY CITY NE
36 BRADNER NE
43 JERRY CITY SE
44 BRADNER SW
45 BRADNER SE

INDEX TO ADJOINING 3.75 MAPS

BRADNER NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 35 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

26	27	
35		
44	45	

26 PEMBERVILLE SW
27 PEMBERVILLE SE
35 BRADNER NW
44 BRADNER SW
45 BRADNER SE

INDEX TO ADJOINING 3.75 MAPS

BRADNER NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 36 OF 63

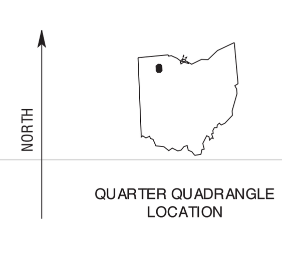
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
MCCLURE SE QUADRANGLE
SHEET NUMBER 37 OF 63

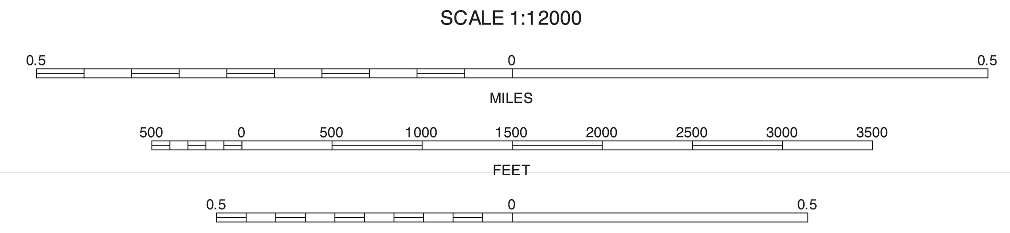
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



	28	29
	■	38
	46	47

28 MCCLURE NE
29 WESTON NW
38 WESTON SW
46 DESHLER NE
47 HOYTVILLE NW

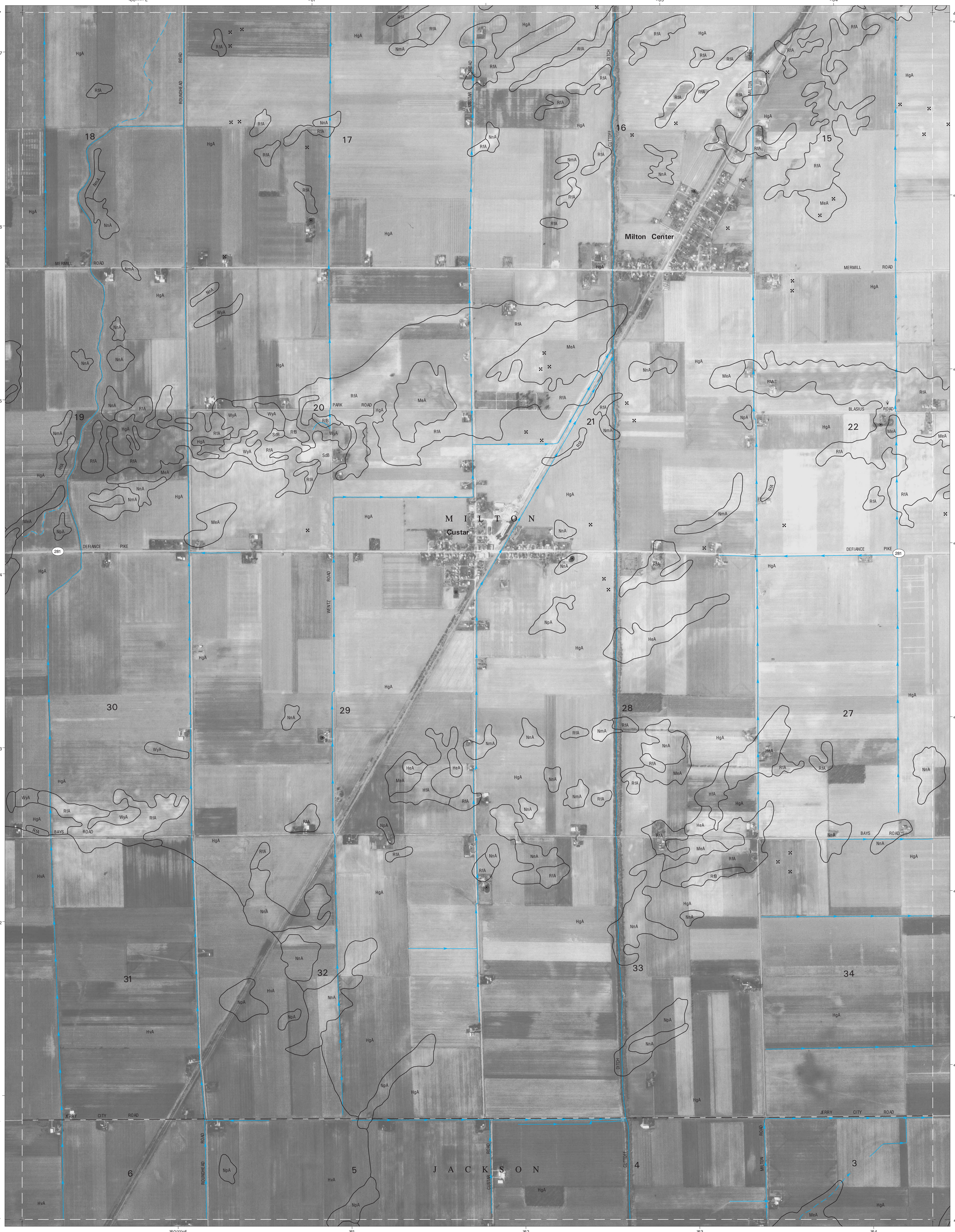
INDEX TO ADJOINING 3.75 MAPS

MCCLURE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 37 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WESTON SW QUADRANGLE
SHEET NUMBER 38 OF 63



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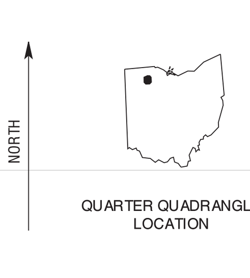
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

28	29	30
37		39
46	47	48

28 MCCLURE NE
29 WESTON NW
30 WESTON NE
37 MCCLURE SE
39 WESTON SE
46 DESHLER NE
47 HOYTVILLE NW
48 HOYTVILLE NE

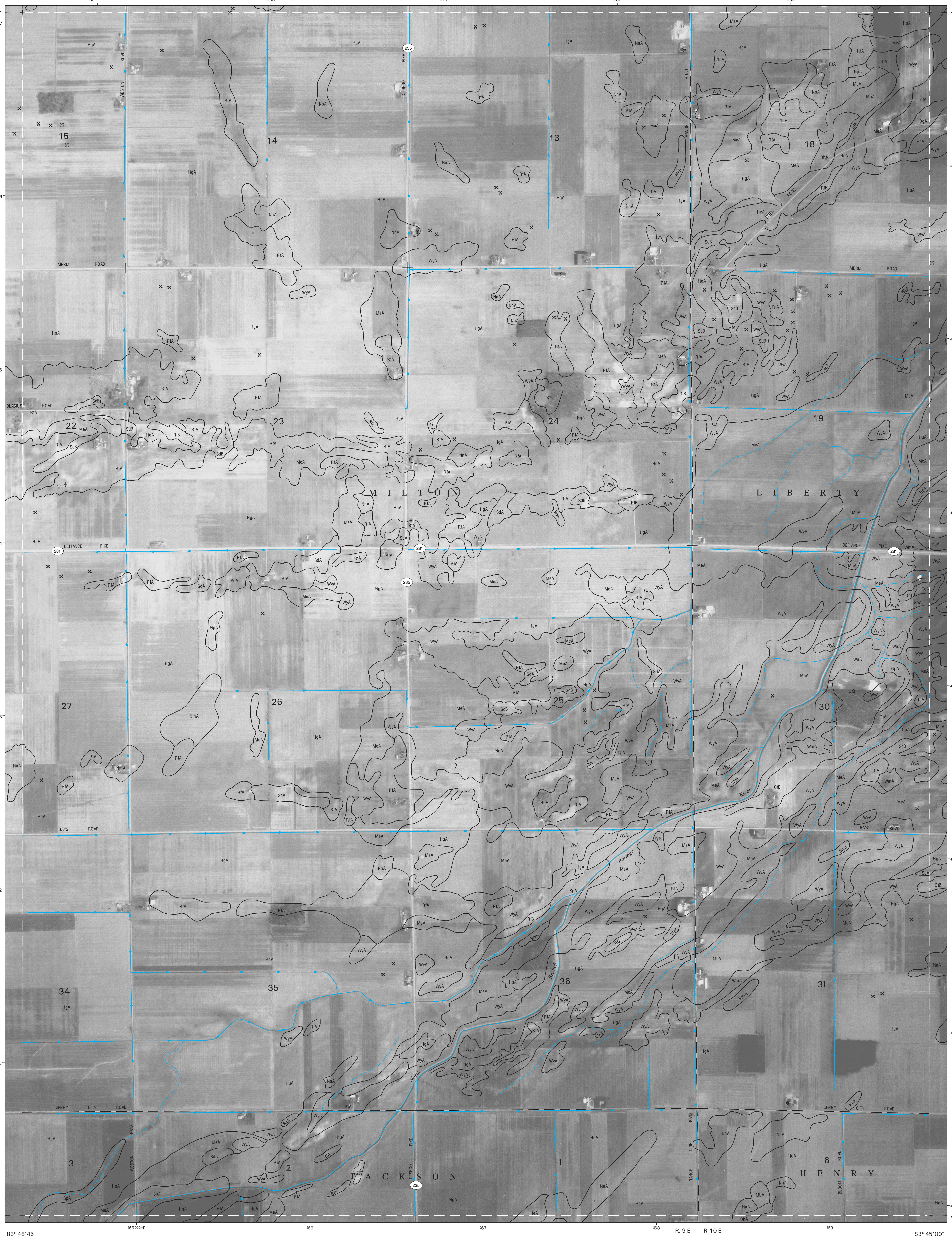
INDEX TO ADJOINING 3.75 MAPS

WESTON SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 38 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
WESTON SE QUADRANGLE
SHEET NUMBER 39 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

29	30	31
38		40
47	48	49

29 WESTON NW
30 WESTON NE
31 BOWLING GREEN SOUTH NW
38 WESTON SW
40 BOWLING GREEN SOUTH SW
47 HOYTVILLE NW
48 HOYTVILLE NE
49 NORTH BALTIMORE NW

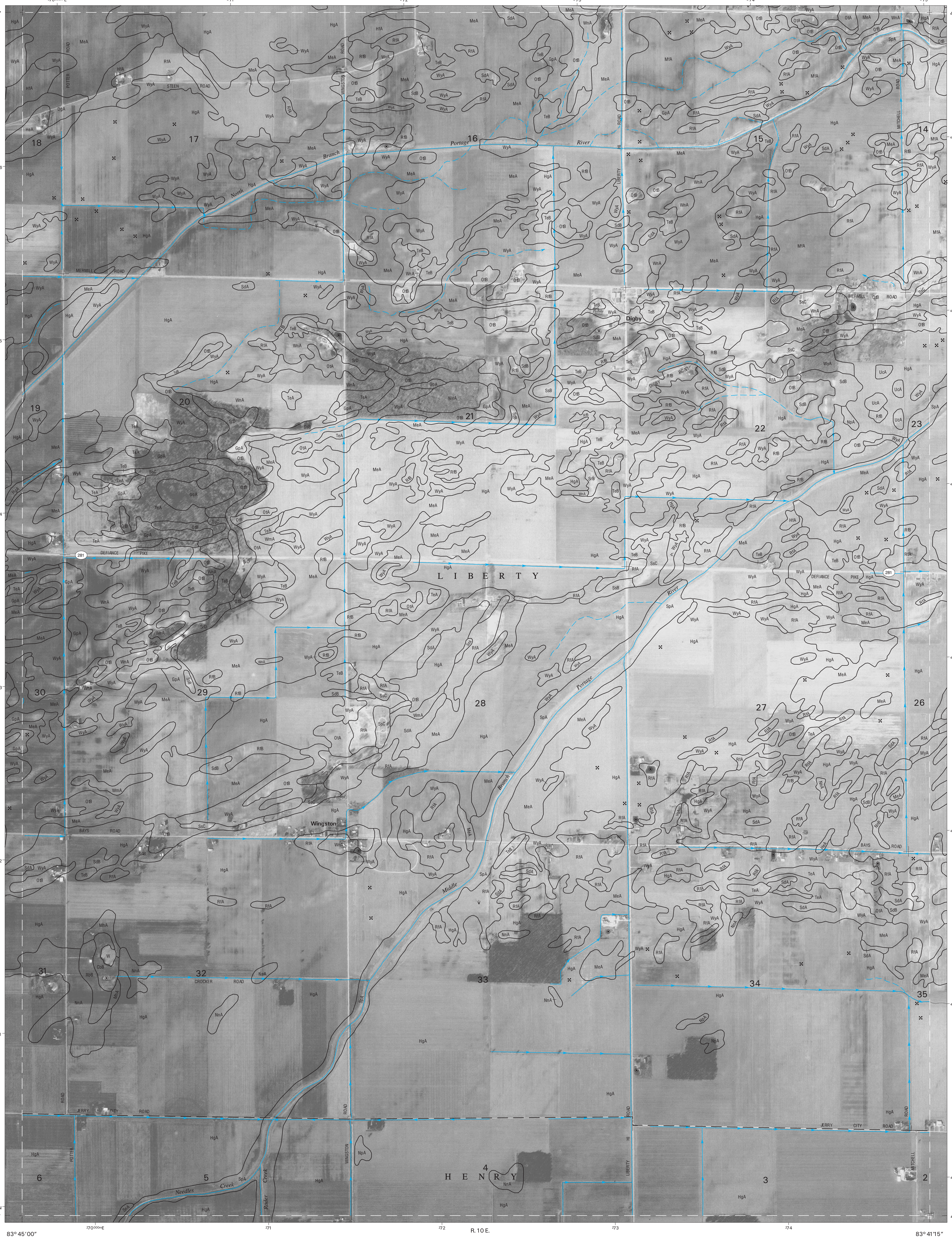
WESTON SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 39 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BOWLING GREEN SOUTH SW QUADRANGLE
SHEET NUMBER 40 OF 63



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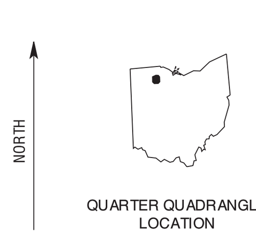
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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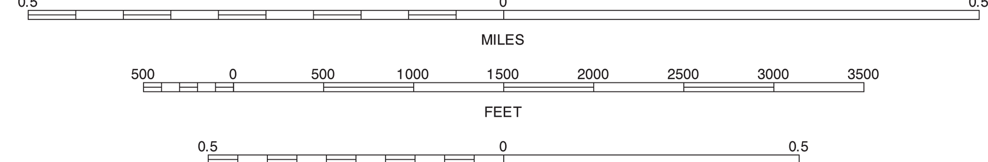


30	31	32
39		41
48	49	50

30 WESTON NE
31 BOWLING GREEN SOUTH NW
32 BOWLING GREEN SOUTH NE
39 WESTON SE
41 BOWLING GREEN SOUTH SE
48 HOYTVILLE NE
49 NORTH BALTIMORE NW
50 NORTH BALTIMORE NE

INDEX TO ADJOINING 3.75 MAPS

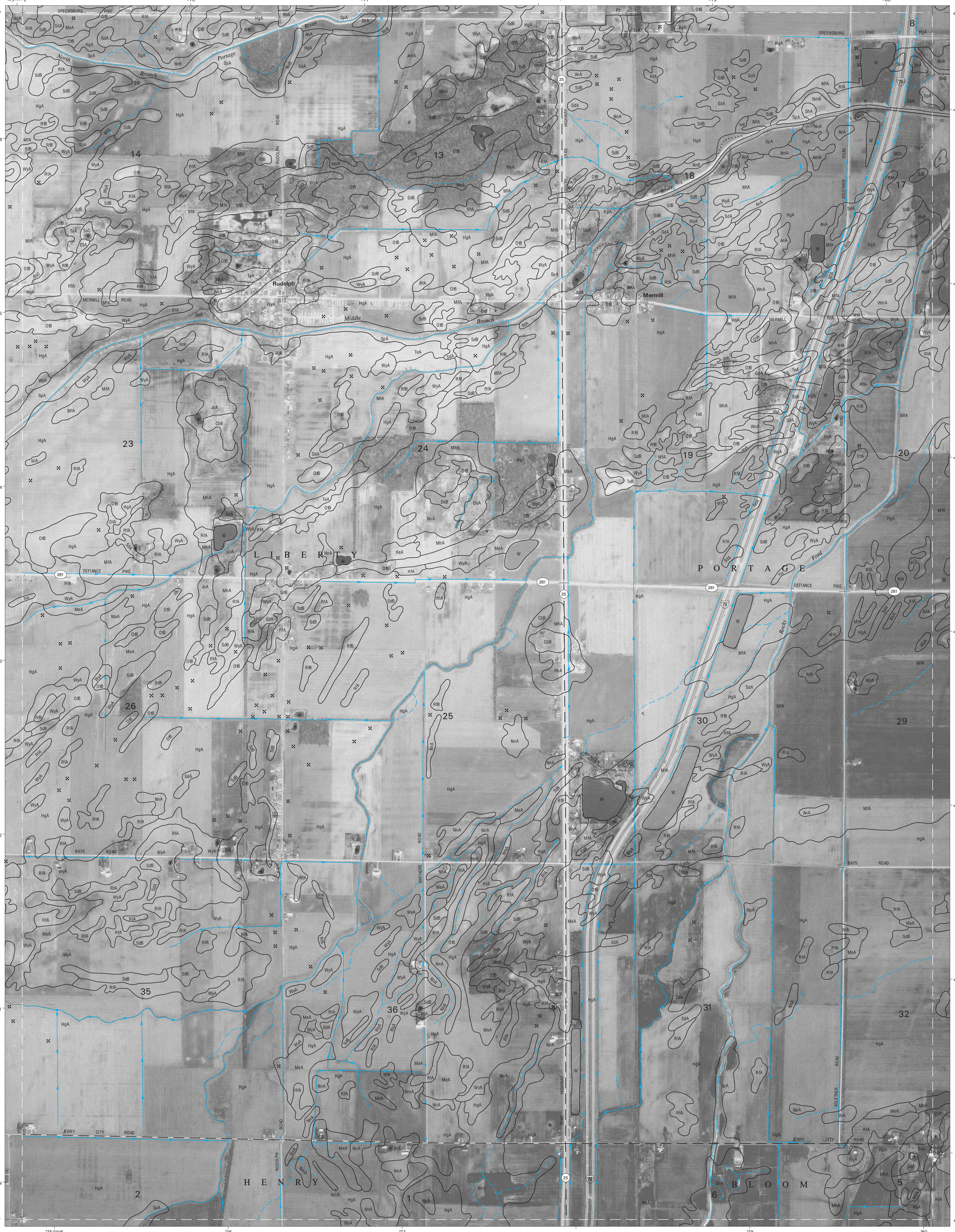
BOWLING GREEN SOUTH SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 40 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BOWLING GREEN SOUTH SE QUADRANGLE
SHEET NUMBER 41 OF 63



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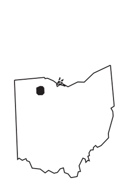
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

31	32	33
40		42
49	50	51

31 BOWLING GREEN SOUTH NW
32 BOWLING GREEN SOUTH NE
33 JERRY CITY NW
40 BOWLING GREEN SOUTH SW
42 JERRY CITY SW
49 NORTH BALTIMORE NW
50 NORTH BALTIMORE NE
51 BLOOMDALE NW

INDEX TO ADJOINING 3.75 MAPS

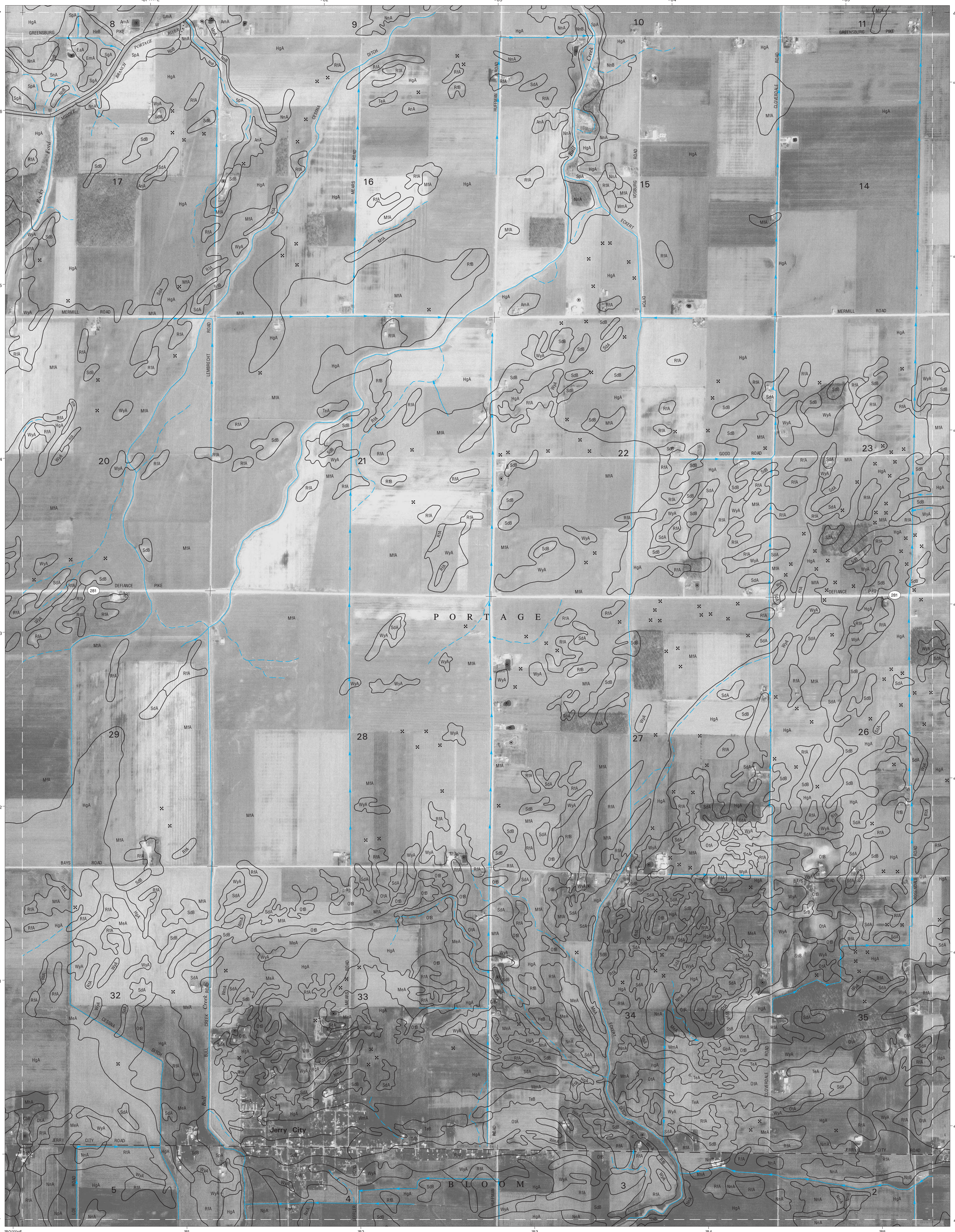
BOWLING GREEN SOUTH SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 41 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
JERRY CITY SW QUADRANGLE
SHEET NUMBER 42 OF 63



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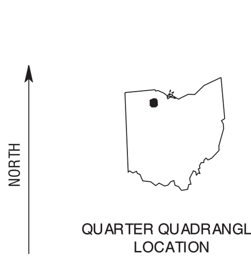
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 — 0 — 0.5

FEET 500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500

KILOMETERS 0.5 — 0 — 0.5

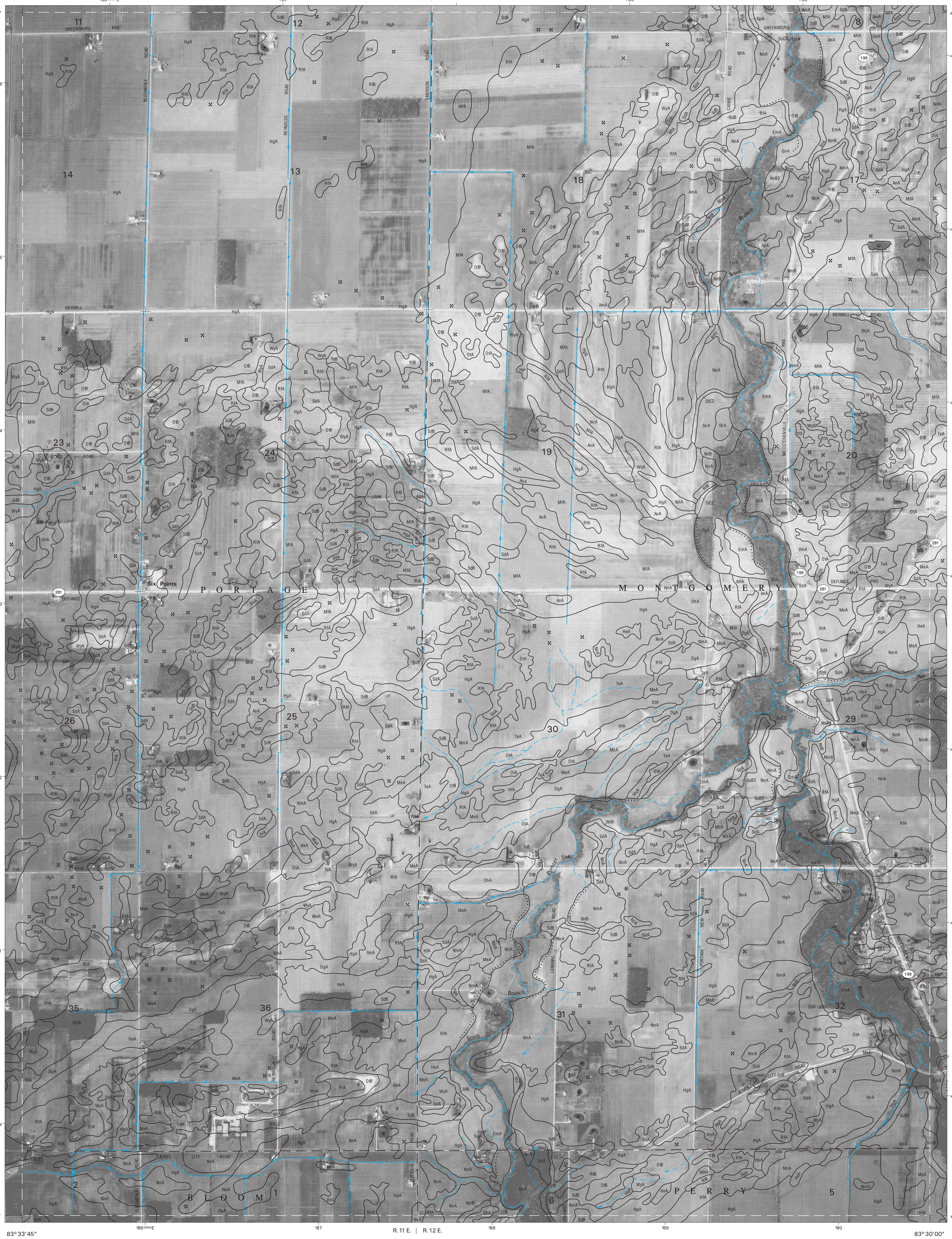
32	33	34
41		43
50	51	52

32 BOWLING GREEN SOUTH NE
33 JERRY CITY NW
34 JERRY CITY NE
41 BOWLING GREEN SOUTH SE
43 JERRY CITY SE
50 NORTH BALTIMORE NE
51 BLOOMDALE NW
52 BLOOMDALE NE

INDEX TO ADJOINING 3.75 MAPS

JERRY CITY SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 42 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

33	34	35
42		44
51	52	53

33 JERRY CITY NW
34 JERRY CITY NE
35 BRADNER NW
42 JERRY CITY SW
44 BRADNER SW
51 BLOOMDALE NW
52 BLOOMDALE NE
53 FOSTORIA NW

INDEX TO ADJOINING 3.75 MAPS

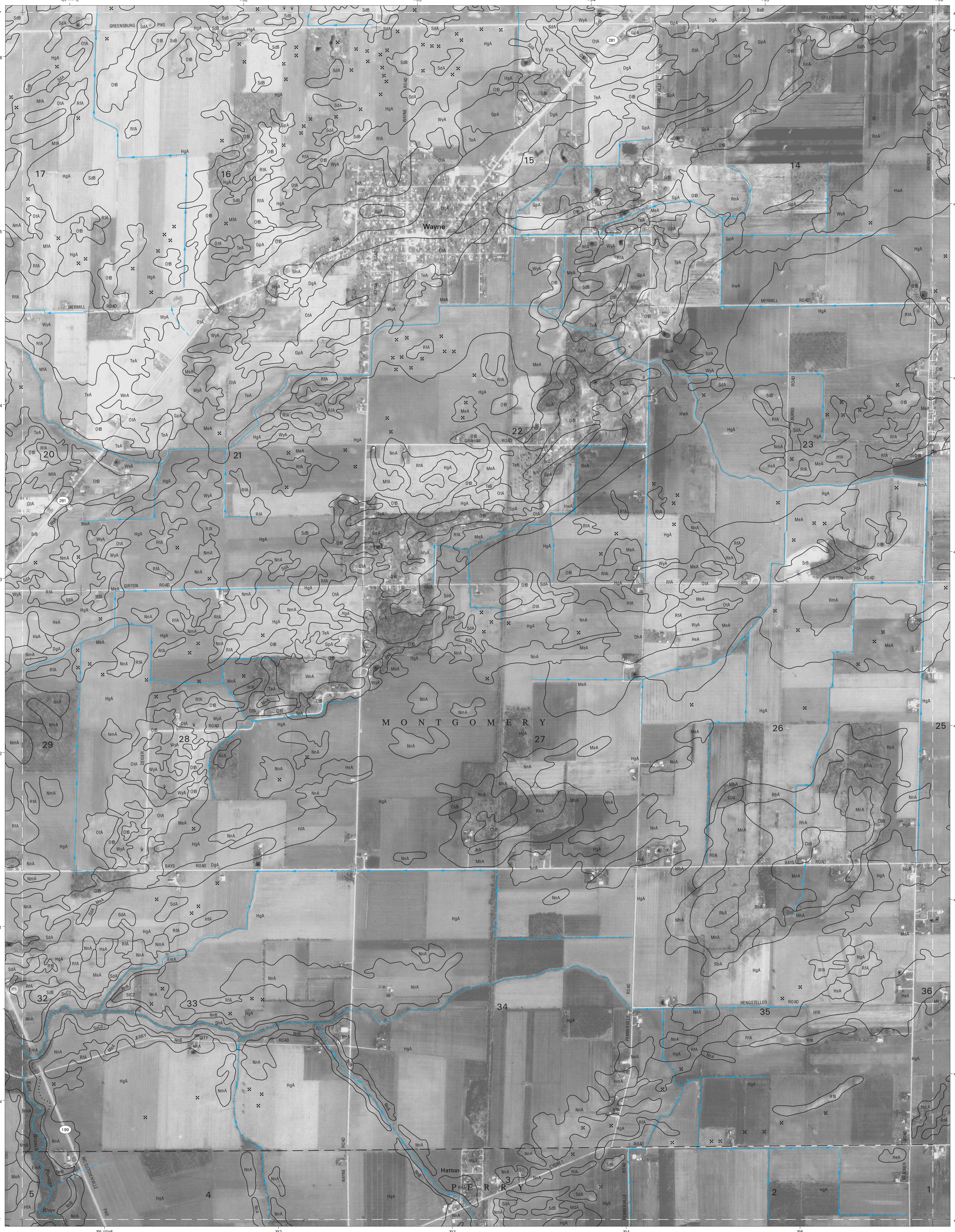
JERRY CITY SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 43 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BRADNER SW QUADRANGLE
SHEET NUMBER 44 OF 63



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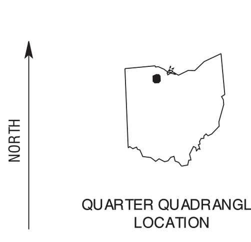

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

34	35	36
43		45
52	53	54

34 JERRY CITY NE
35 BRADNER NW
36 BRADNER NE
43 JERRY CITY SE
45 BRADNER SE
52 BLOOMDALE NE
53 FOSTORIA NW
54 FOSTORIA NE

INDEX TO ADJOINING 3.75 MAPS

BRADNER SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 44 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

35	36	
44		
53	54	

35 BRADNER NW
36 BRADNER NE
44 BRADNER SW
53 FOSTORIA NW
54 FOSTORIA NE

INDEX TO ADJOINING 3.75 MAPS

BRADNER SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 45 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
DESHLER NE QUADRANGLE
SHEET NUMBER 46 OF 63

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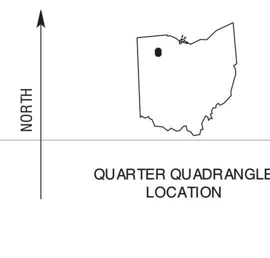
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 0 0.5

FEET 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS 0.5 0 0.5

	37	38
	■	47
	55	56

37 MCCLURE SE
38 WESTON SW
47 HOYTVILLE NW
55 DESHLER SE
56 HOYTVILLE SW

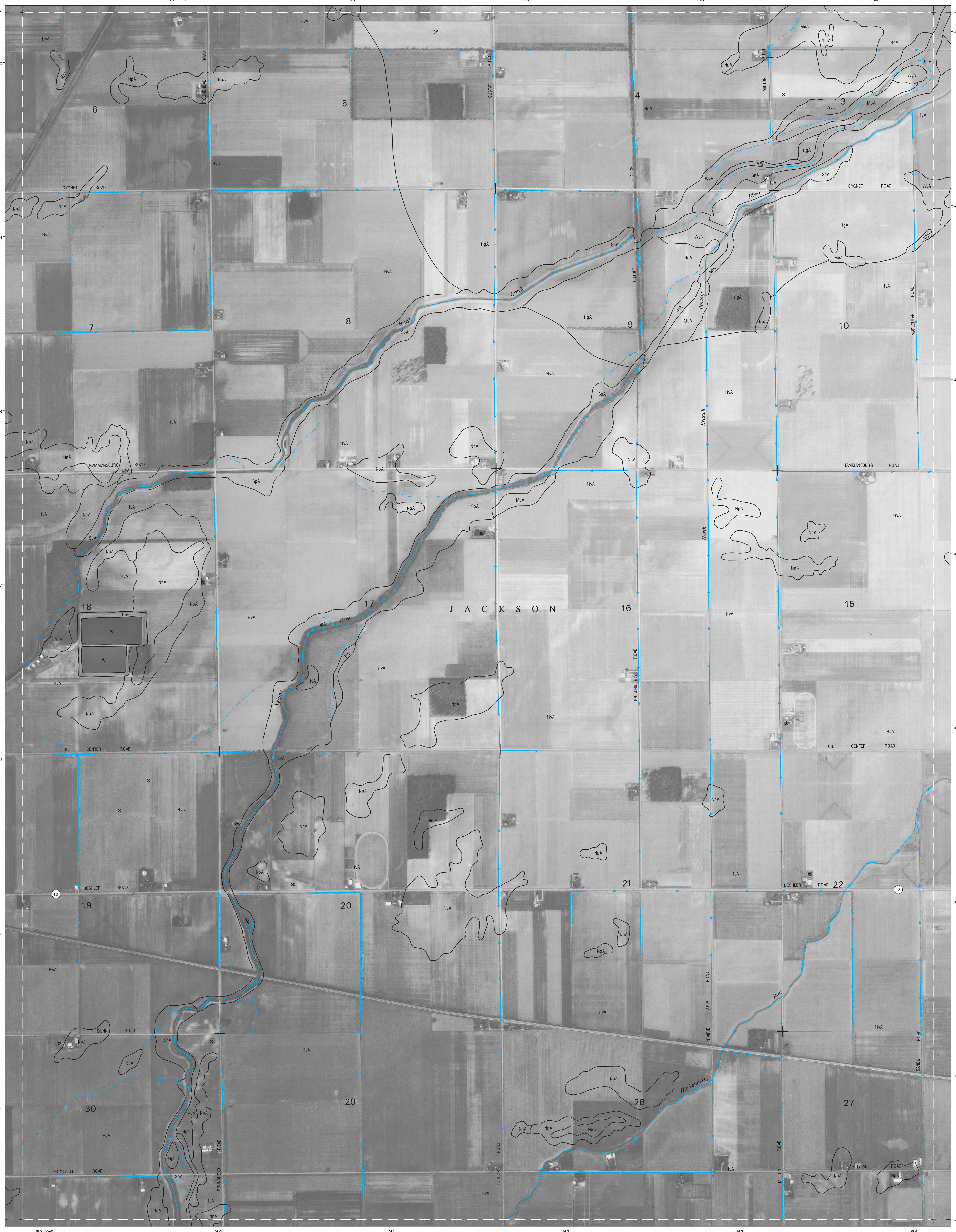
INDEX TO ADJOINING 3.75 MAPS

DESHLER NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 46 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
HOYTVILLE NW QUADRANGLE
SHEET NUMBER 47 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

37	38	39
46		48
55	56	57

37 MCCLURE SE
38 WESTON SW
39 WESTON SE
46 DESHLER NE
48 HOYTVILLE NE
55 DESHLER SE
56 HOYTVILLE SW
57 HOYTVILLE SE

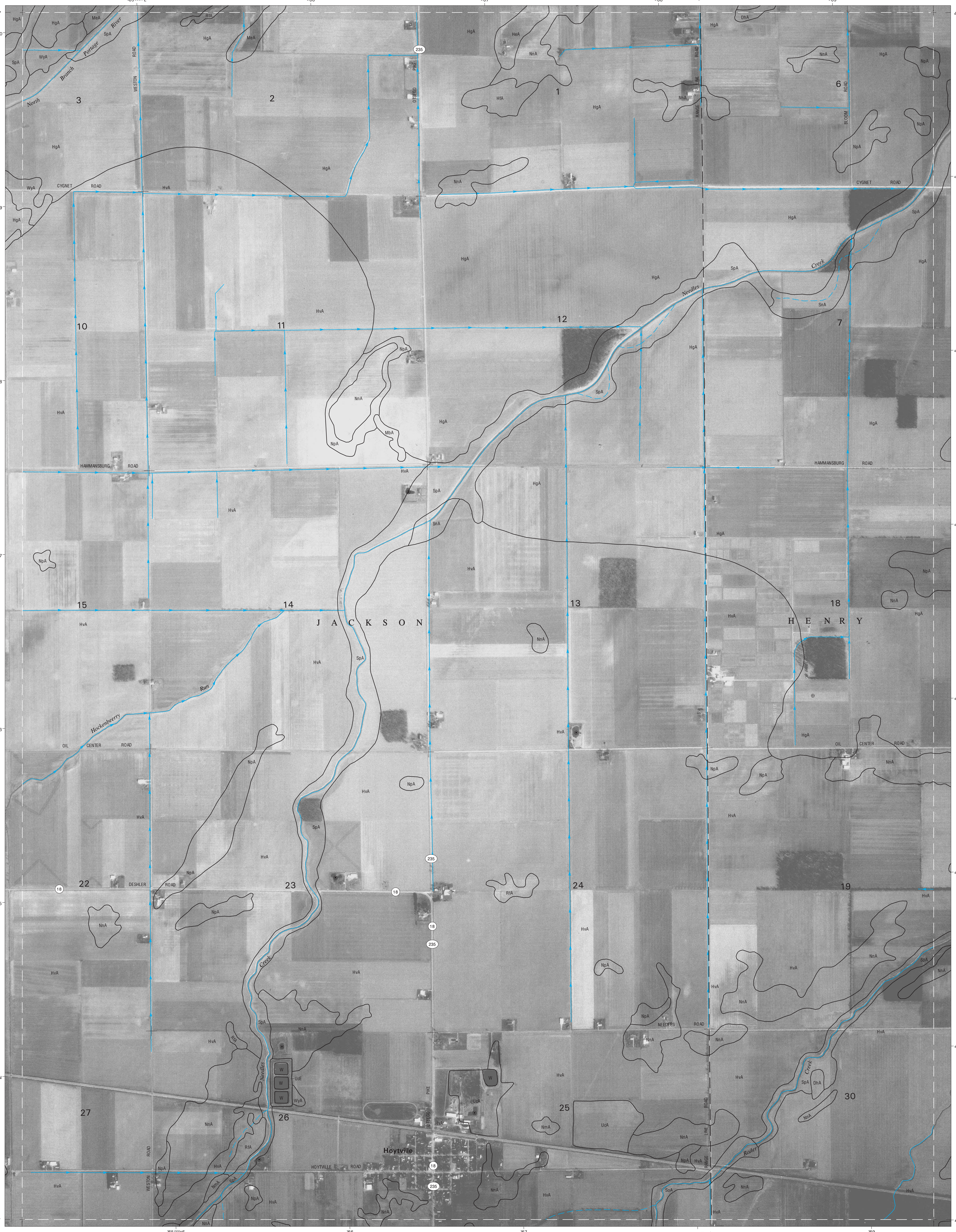
INDEX TO ADJOINING 3.75 MAPS

HOYTVILLE NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 47 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
HOYTVILLE NE QUADRANGLE
SHEET NUMBER 48 OF 63



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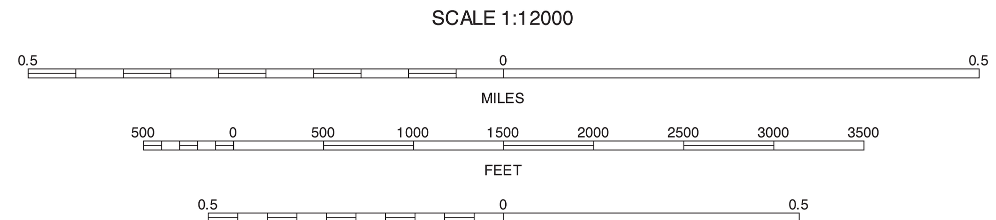
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000



38	39	40
47		49
56	57	58

38 WESTON SW
39 WESTON SE
40 BOWLING GREEN SOUTH SW
47 HOYTVILLE NW
49 NORTH BALTIMORE NW
56 HOYTVILLE SW
57 HOYTVILLE SE
58 NORTH BALTIMORE SW

INDEX TO ADJOINING 3.75 MAPS

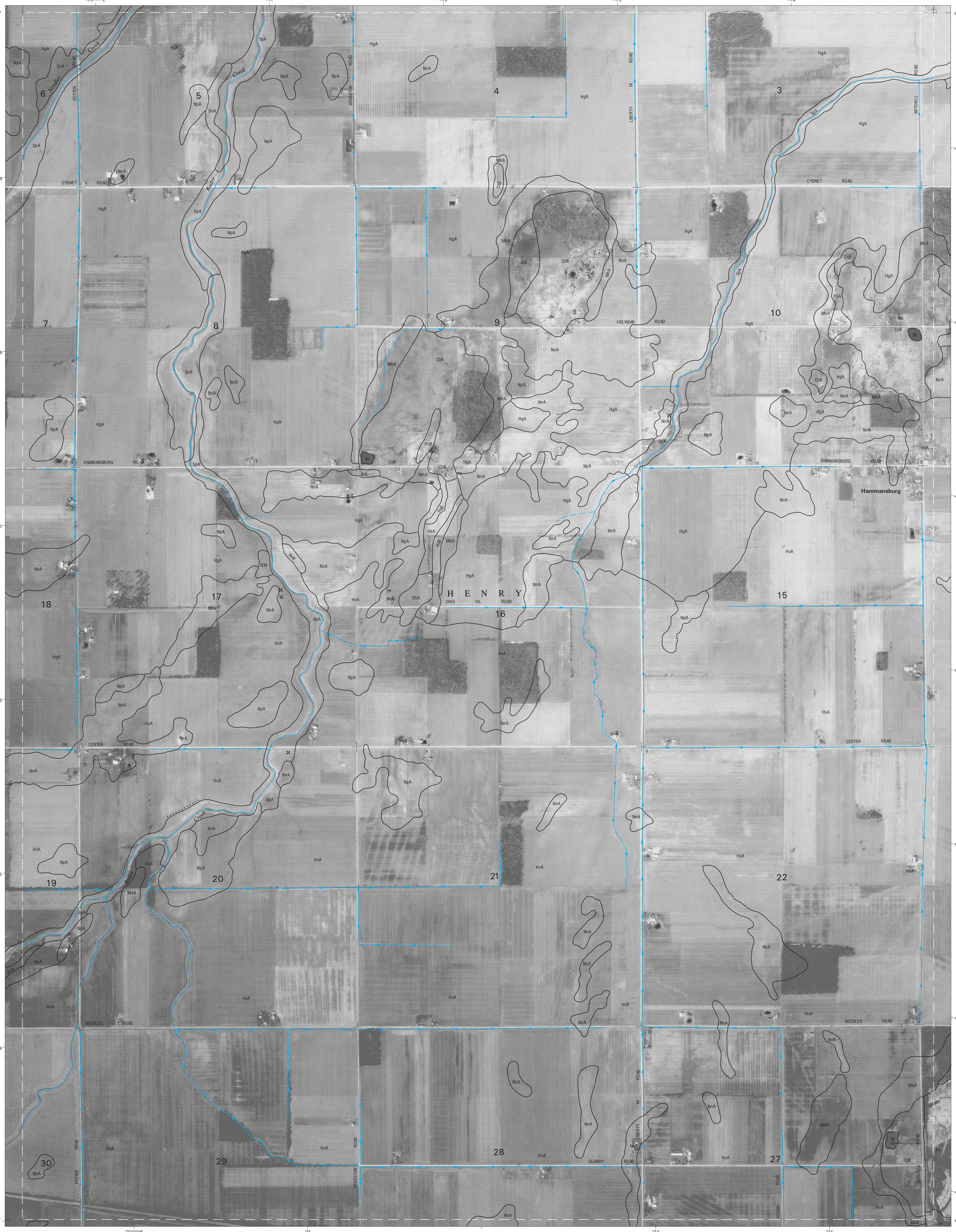
HOYTVILLE NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 48 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
NORTH BALTIMORE NW QUADRANGLE
SHEET NUMBER 49 OF 63



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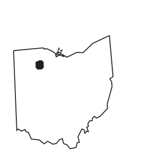
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

39	40	41
48		50
57	58	59

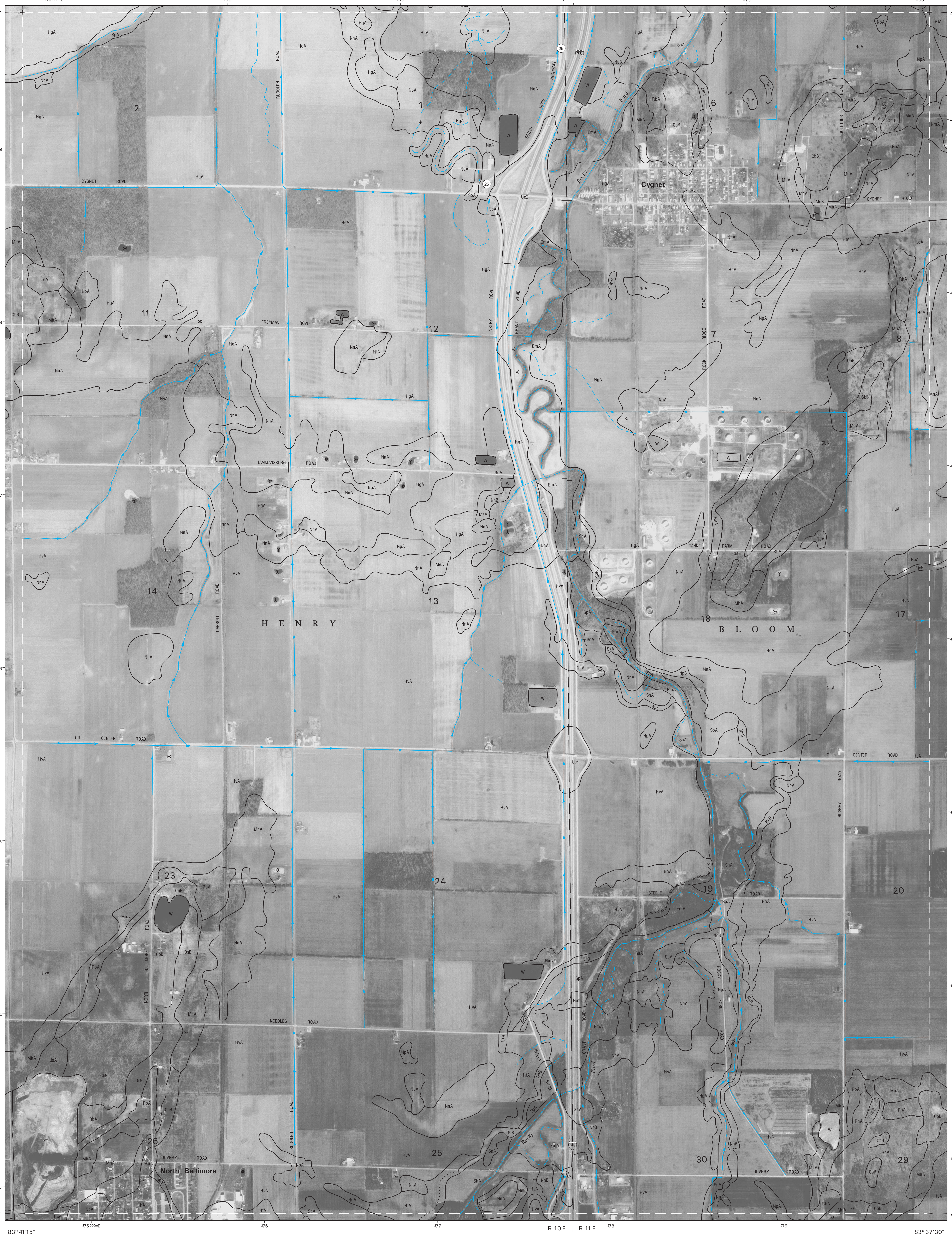
39 WESTON SE
40 BOWLING GREEN SOUTH SW
41 BOWLING GREEN SOUTH SE
48 HOYTVILLE NE
50 NORTH BALTIMORE NE
57 HOYTVILLE SE
58 NORTH BALTIMORE SW
59 NORTH BALTIMORE SE

INDEX TO ADJOINING 3.75 MAPS

NORTH BALTIMORE NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 49 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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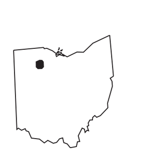
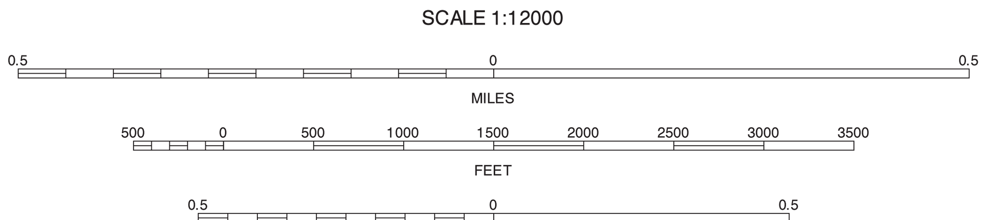
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE
LOCATION

SCALE 1:12000



40	41	42
49		51
58	59	60

40 BOWLING GREEN SOUTH SW
41 BOWLING GREEN SOUTH SE
42 JERRY CITY SW
49 NORTH BALTIMORE NW
51 BLOOMDALE NW
58 NORTH BALTIMORE SW
59 NORTH BALTIMORE SE
60 BLOOMDALE SW

INDEX TO ADJOINING 3.75 MAPS

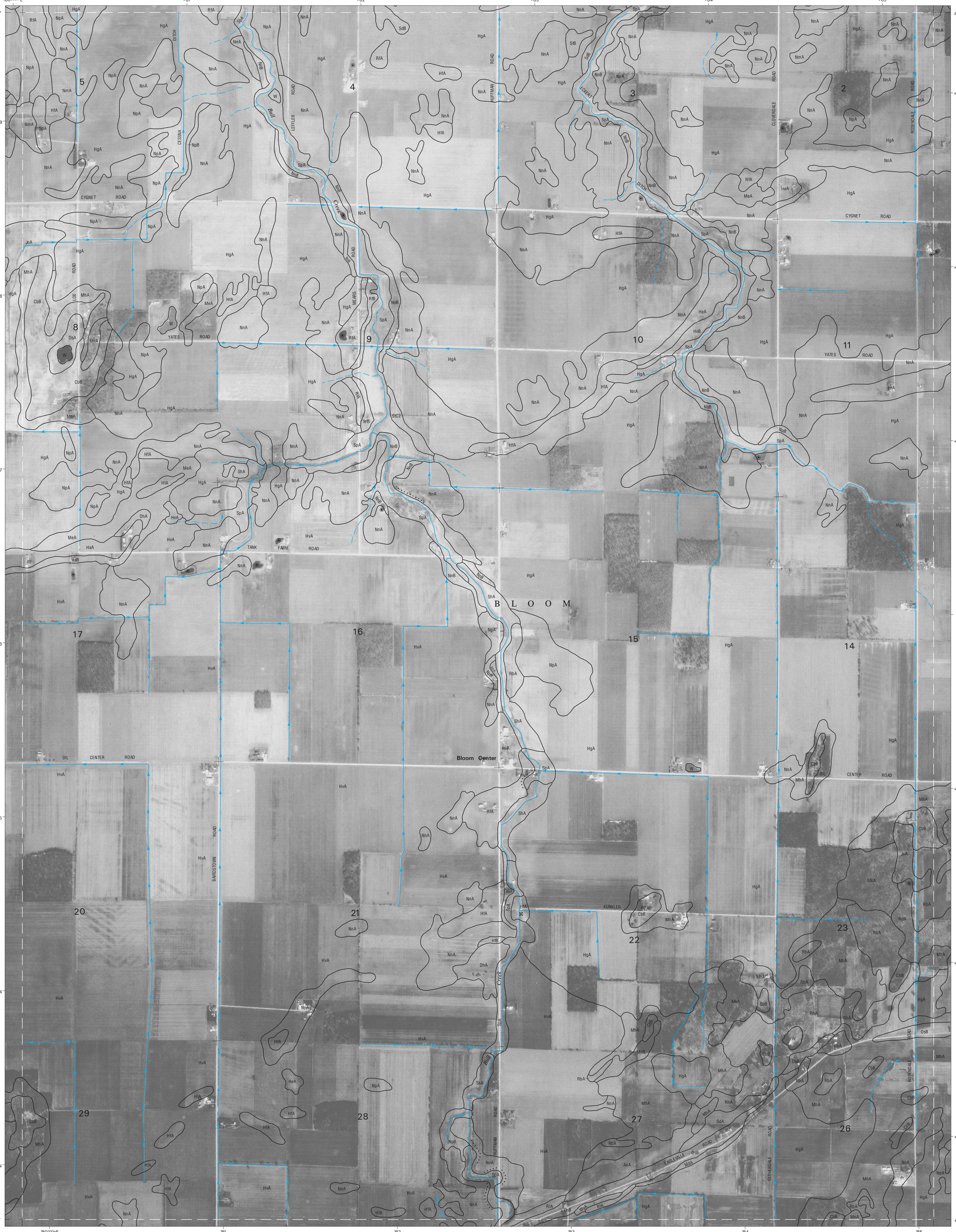
NORTH BALTIMORE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 50 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BLOOMDALE NW QUADRANGLE
SHEET NUMBER 51 OF 63

83° 37′30″ 83° 33′45″
41°15′00″ 41°15′00″



41°11′15″ 41°11′15″
83° 37′30″ 83° 33′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

41	42	43
50		52
59	60	61

41 BOWLING GREEN SOUTH SE
42 JERRY CITY SW
43 JERRY CITY SE
50 NORTH BALTIMORE NE
52 BLOOMDALE NE
59 NORTH BALTIMORE SE
60 BLOOMDALE SW
61 BLOOMDALE SE

INDEX TO ADJOINING 3.75 MAPS

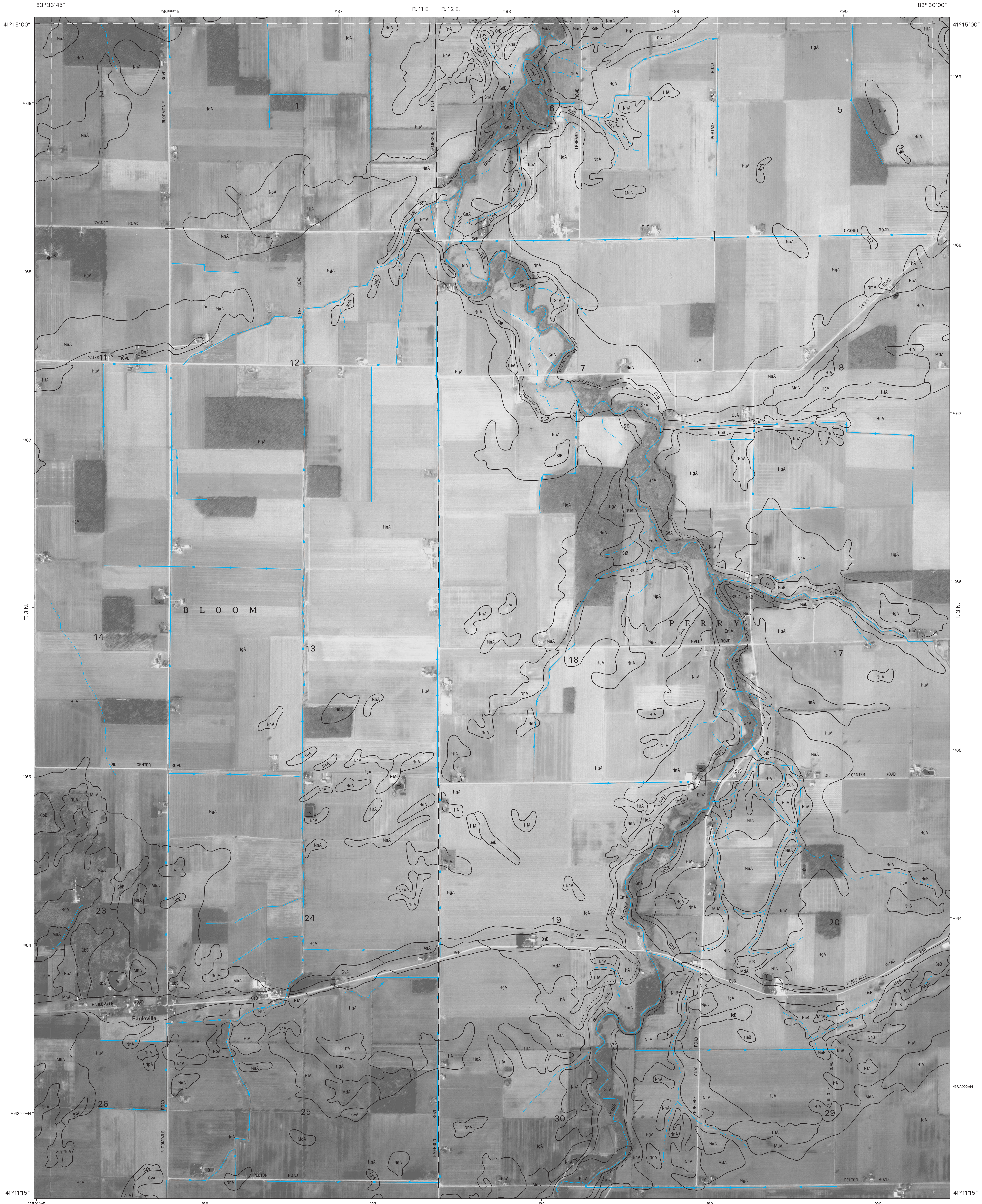
BLOOMDALE NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 51 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BLOOMDALE NE QUADRANGLE
SHEET NUMBER 52 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

42	43	44
51		53
60	61	62

42 JERRY CITY SW
43 JERRY CITY SE
44 BRADNER SW
51 BLOOMDALE NW
53 FOSTORIA NW
60 BLOOMDALE SW
61 BLOOMDALE SE
62 FOSTORIA SW

INDEX TO ADJOINING 3.75 MAPS

BLOOMDALE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 52 OF 63

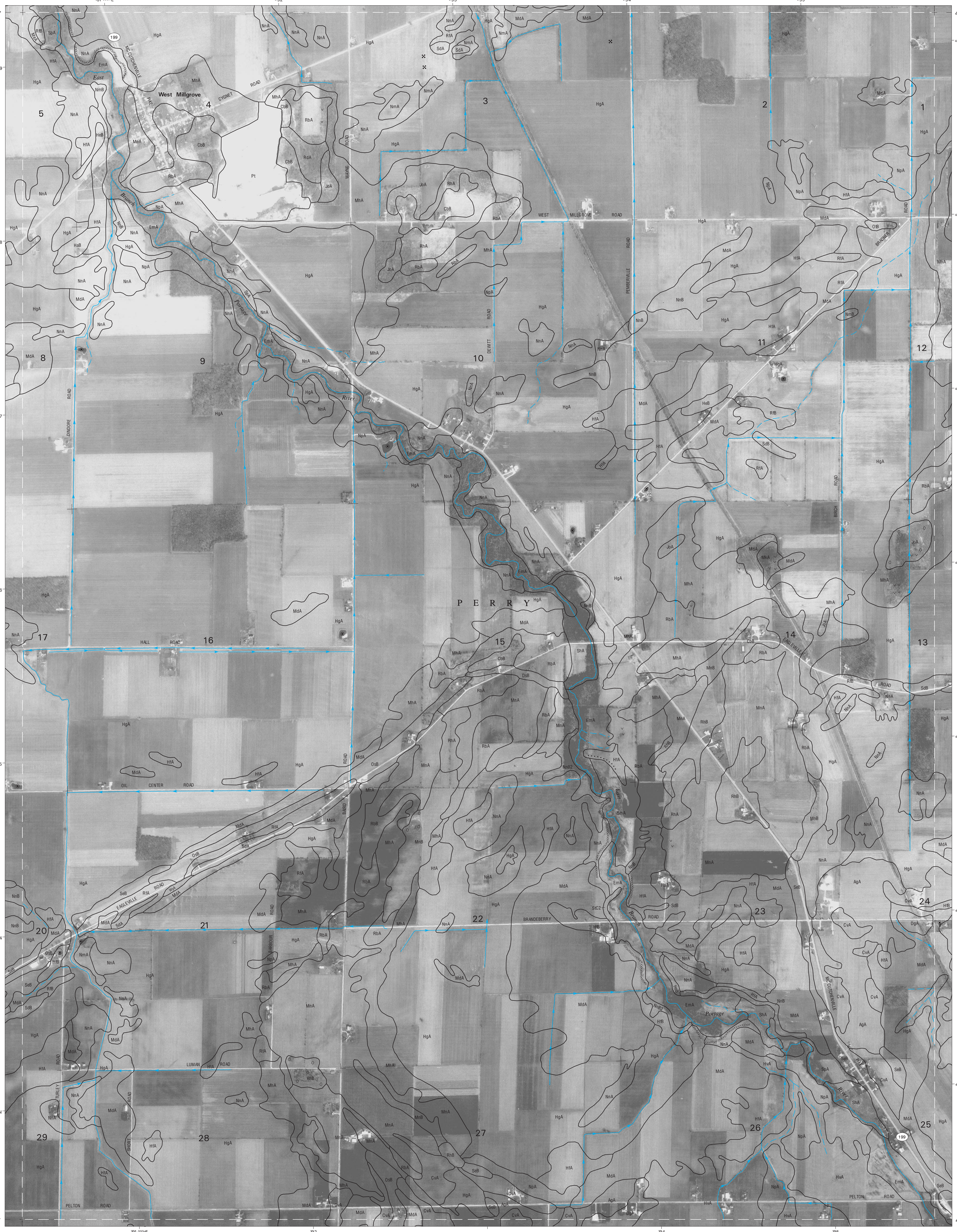
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
FOSTORIA NW QUADRANGLE
SHEET NUMBER 53 OF 63

83° 30′00″ R. 12 E. 83° 26′15″

41°15′00″ 41°15′00″



41°11′15″ 41°11′15″

83° 30′00″ R. 12 E. 83° 26′15″

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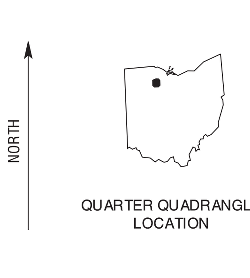

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

43	44	45
52		54
61	62	63

43 JERRY CITY SE
44 BRADNER SW
45 BRADNER SE
52 BLOOMDALE NE
54 FOSTORIA NE
61 BLOOMDALE SE
62 FOSTORIA SW
63 FOSTORIA SE

INDEX TO ADJOINING 3.75 MAPS

FOSTORIA NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 53 OF 63

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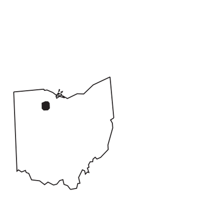
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
FOSTORIA NE QUADRANGLE
SHEET NUMBER 54 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

44	45	
53		
62	63	

44 BRADNER SW
45 BRADNER SE
53 FOSTORIA NW
62 FOSTORIA SW
63 FOSTORIA SE

INDEX TO ADJOINING 3.75 MAPS

FOSTORIA NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 54 OF 63

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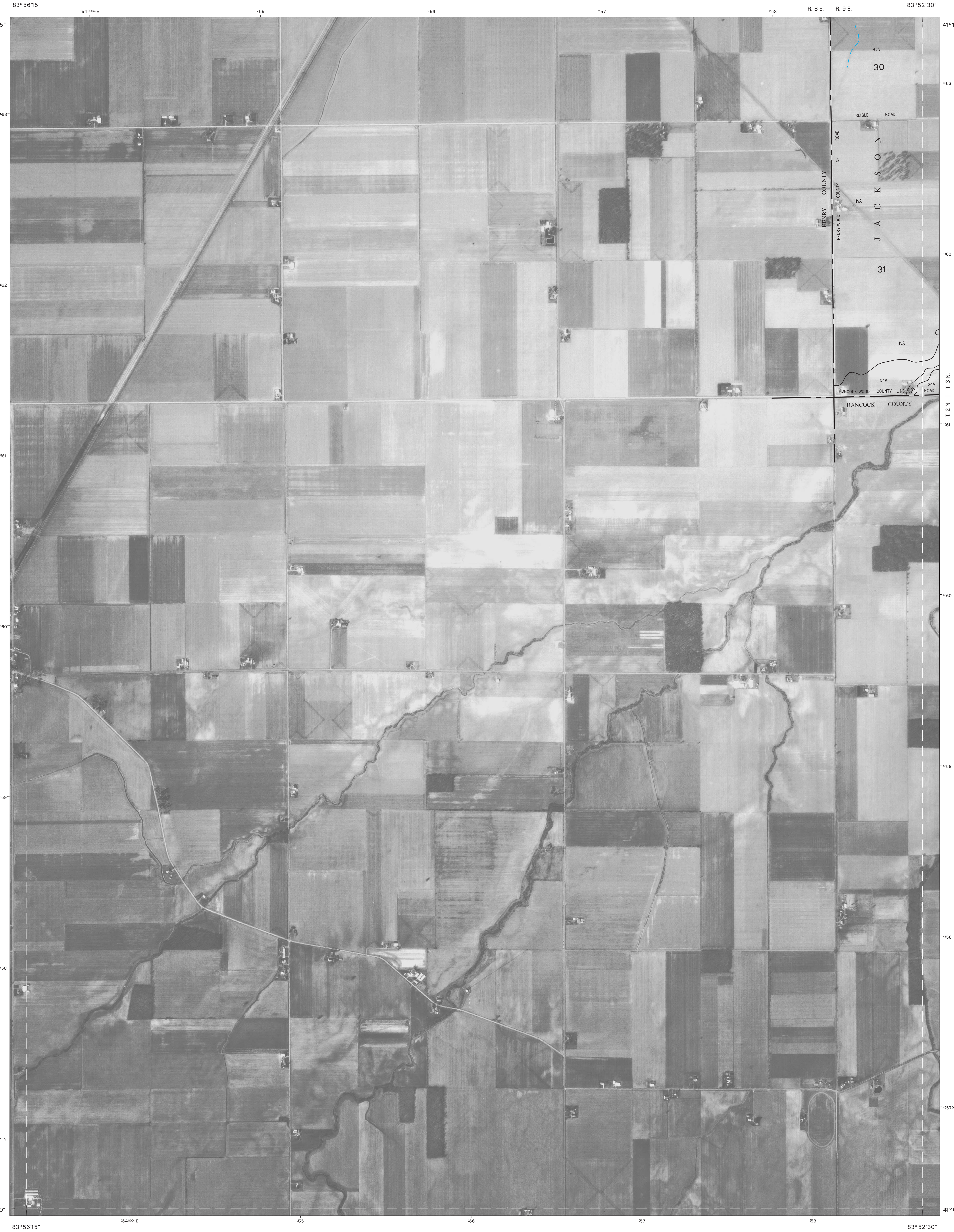
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
DESHLER SE QUADRANGLE
SHEET NUMBER 55 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

46 DESHLER NE
47 HOYTVILLE NW
56 HOYTVILLE SW

INDEX TO ADJOINING 3.75 MAPS

DESHLER SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 55 OF 63

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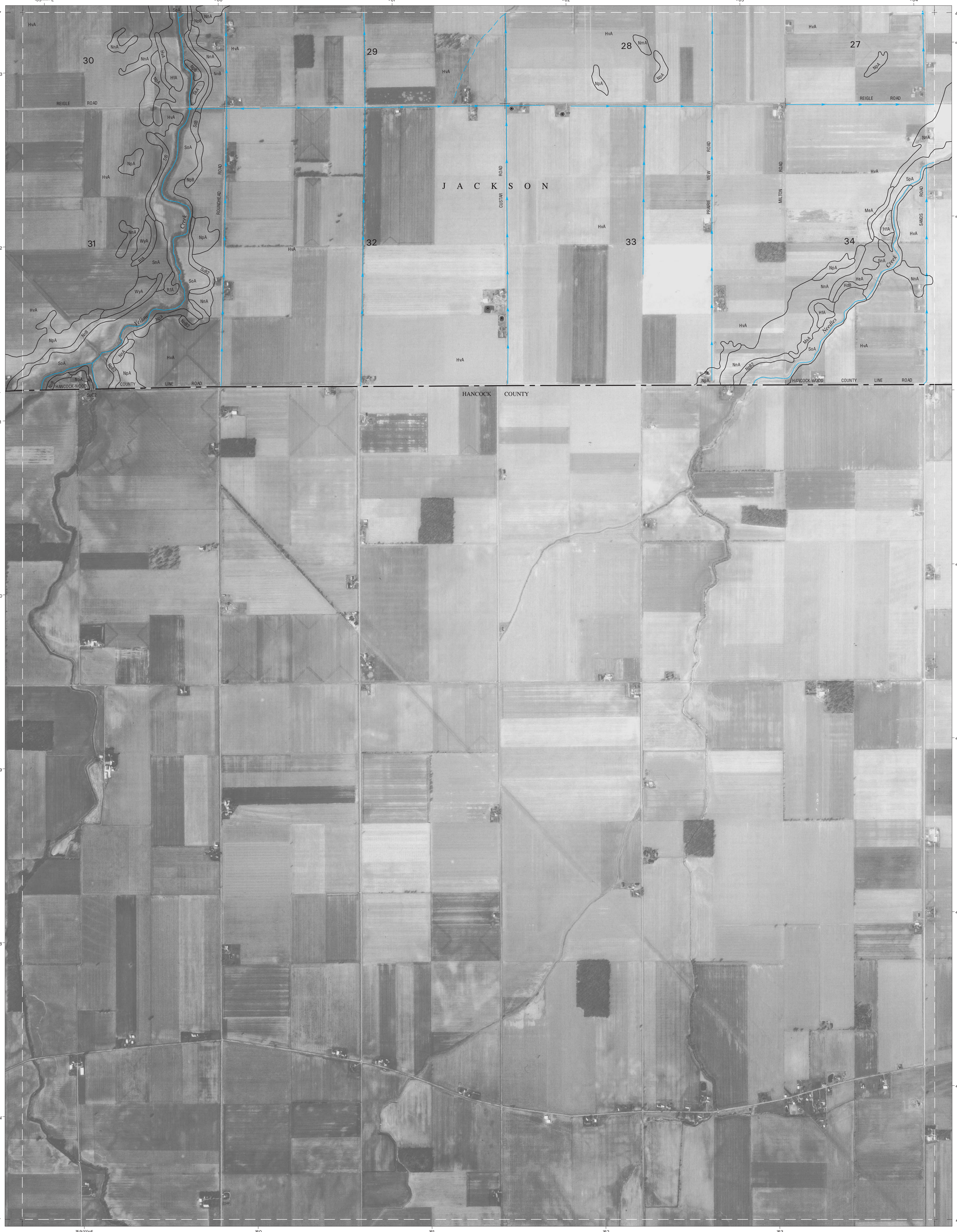
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
HOYTVILLE SW QUADRANGLE
SHEET NUMBER 56 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

46	47	48
55		57

46 DESHLER NE
47 HOYTVILLE NW
48 HOYTVILLE NE
55 DESHLER SE
57 HOYTVILLE SE

INDEX TO ADJOINING 3.75 MAPS

HOYTVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 56 OF 63

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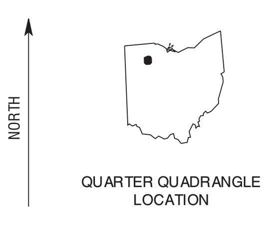
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
HOYTVILLE SE QUADRANGLE
SHEET NUMBER 57 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

47	48	49
56		58

47 HOYTVILLE NW
48 HOYTVILLE NE
49 NORTH BALTIMORE NW
56 HOYTVILLE SW
58 NORTH BALTIMORE SW

HOYTVILLE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 57 OF 63

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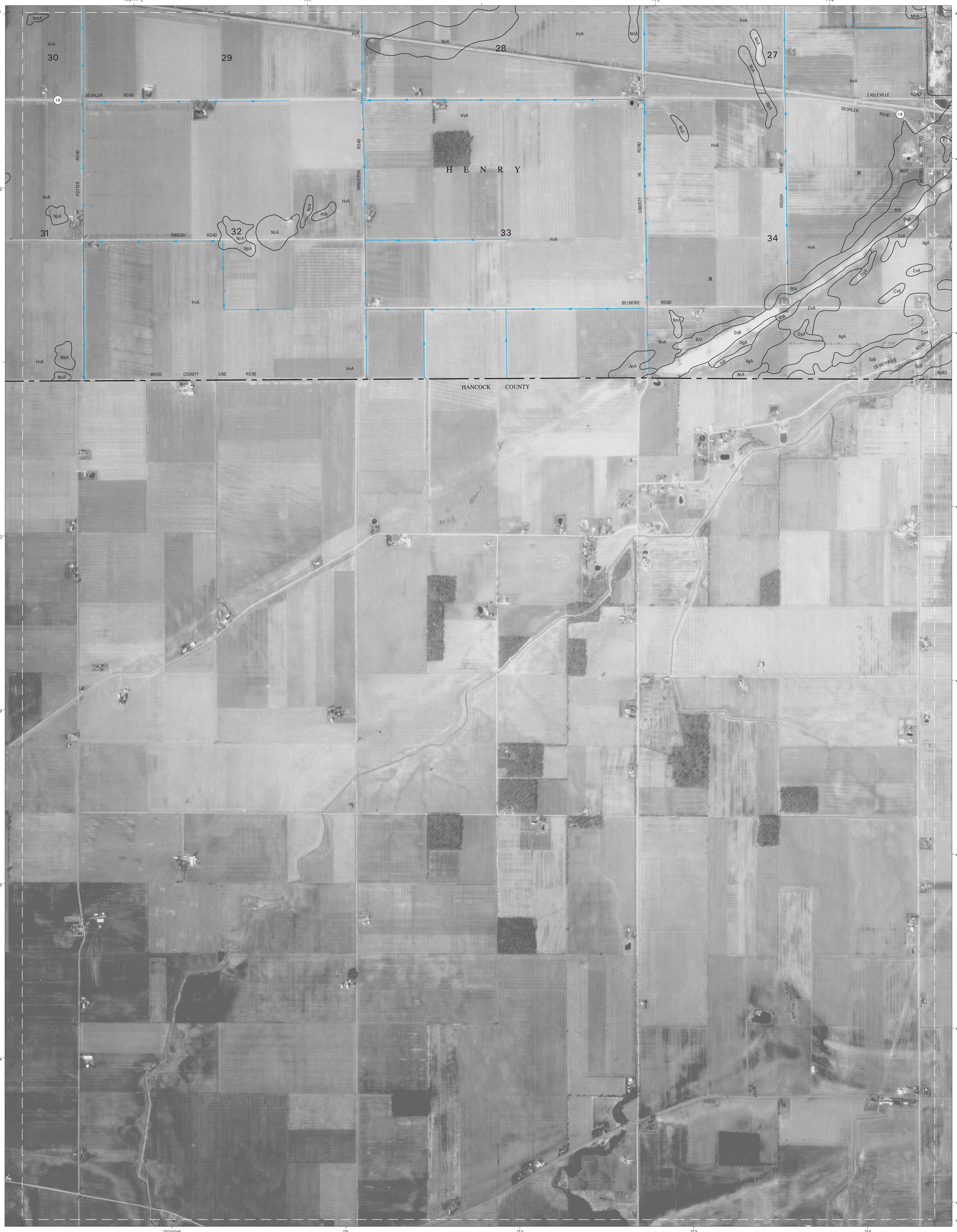
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

48	49	50
57		59

48 HOYTVILLE NE
49 NORTH BALTIMORE NW
50 NORTH BALTIMORE NE
57 HOYTVILLE SE
59 NORTH BALTIMORE SE

INDEX TO ADJOINING 3.75 MAPS

NORTH BALTIMORE SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 58 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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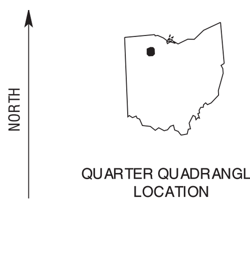
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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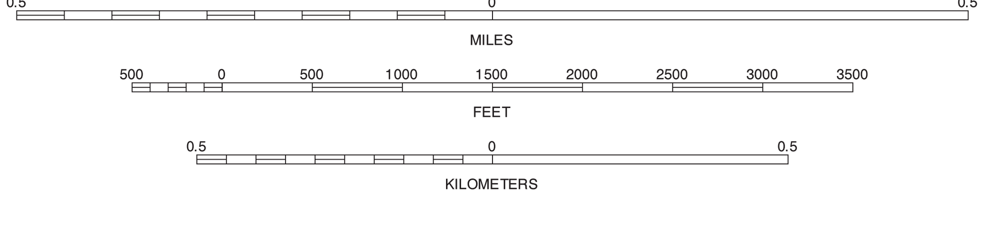

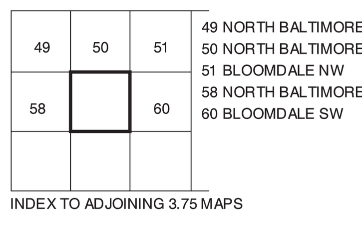

NORTH BALTIMORE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 59 OF 63

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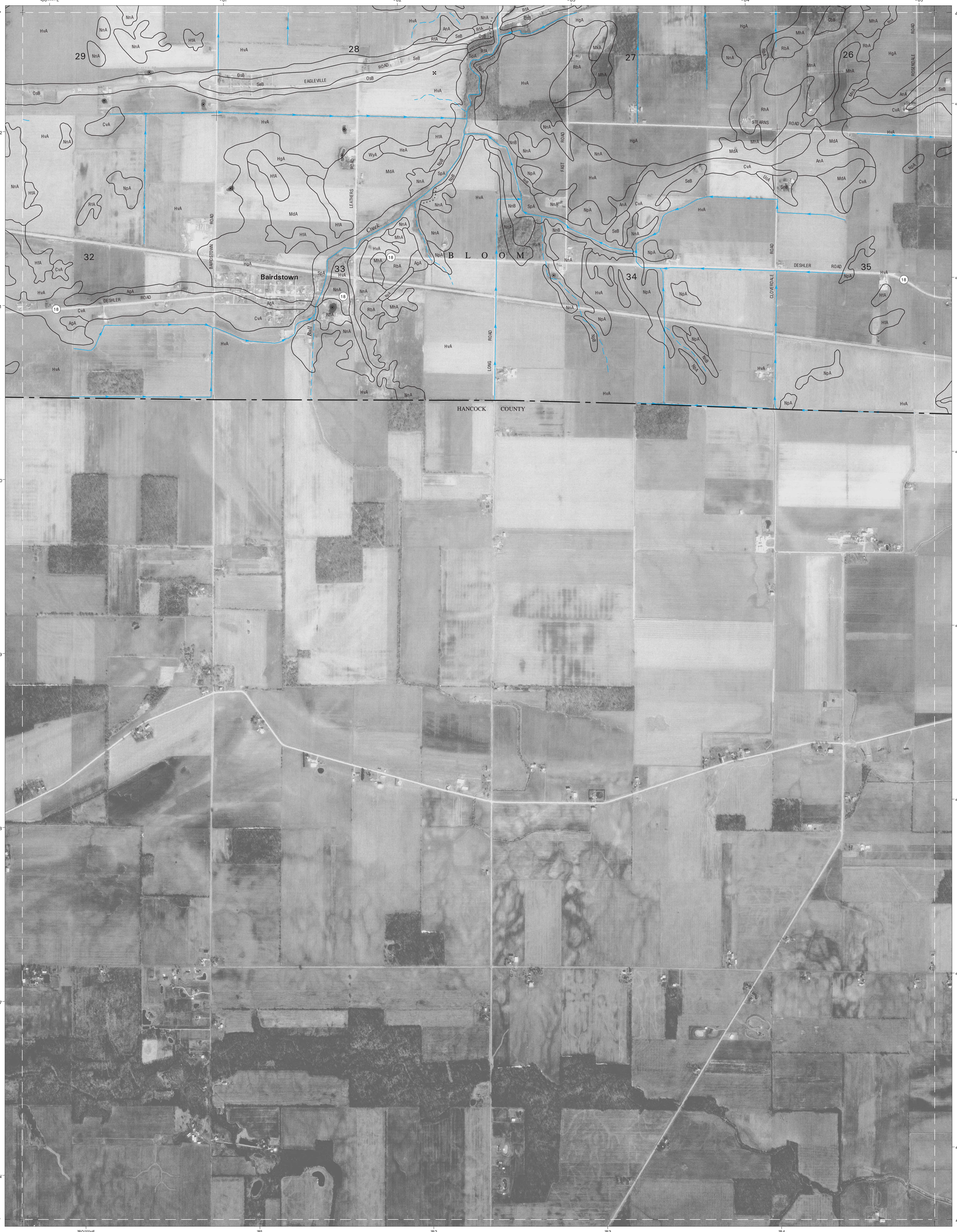
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BLOOMDALE SW QUADRANGLE
SHEET NUMBER 60 OF 63



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

50	51	52
59		61

50 NORTH BALTIMORE NE
51 BLOOMDALE NW
52 BLOOMDALE NE
59 NORTH BALTIMORE SE
61 BLOOMDALE SE

INDEX TO ADJOINING 3.75 MAPS

BLOOMDALE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 60 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
BLOOMDALE SE QUADRANGLE
SHEET NUMBER 61 OF 63

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

51	52	53
60		62

51 BLOOMDALE NW
52 BLOOMDALE NE
53 FOSTORIA NW
60 BLOOMDALE SW
62 FOSTORIA SW

INDEX TO ADJOINING 3.75 MAPS

BLOOMDALE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 61 OF 63

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NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

52	53	54
61		63

52 BLOOMDALE NE
53 FOSTORIA NW
54 FOSTORIA NE
61 BLOOMDALE SE
63 FOSTORIA SE

INDEX TO ADJOINING 3.75 MAPS

FOSTORIA SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 62 OF 63

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WOOD COUNTY, OHIO
FOSTORIA SE QUADRANGLE
SHEET NUMBER 63 OF 63

83° 26′15″ | 296 000m E | R. 12 E. | R. 13 E. | 298 | 299 | 300 | 83° 22′30″

41°11′15″

41° 07′30″

296 000m E | 297 | 298 | 299 | 300

83° 26′15″ | 83° 22′30″

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988 to 1992 aerial photography. Hydrography and cultural features were acquired from NRCS. PLSS was acquired from USGS. PLSS was edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

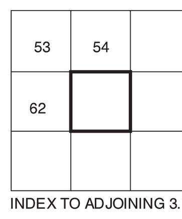
QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS



53 FOSTORIA NW
54 FOSTORIA NE
62 FOSTORIA SW

INDEX TO ADJOINING 3.75 MAPS

FOSTORIA SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 63 OF 63

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.